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MEDICAL ESSAYS

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Censura Theologica Praecessit

Medical Essays

FOREWORD

In the year 1926, the first edition of Medical Essays was offered to the public. For the author it was a new venture. It was therefore with some misgivings that he entered the field.

The favorable reception accorded his work has engendered courage to develop Medical Essays to cover a wider field. The author confidently hopes that he has presented the sound principles underlying the whole field of Pastoral Medicine. The best authorities have been studied in every department of the vast science, and all opinions have been weighed and judged by the criterion of Catholic teaching.

The noble encouragement of leading priests and physicians has made the labor of revision a delight.

The book is in the main a medical treatise destined for Physicians and Priests. Inasmuch as there are some *medico-theological* matters herein treated, every page has been submitted to the censorship of an able theologian, and approved by him.

As the book is privately printed and offered to a select public, it demands the privileges of a MEDICAL TREATISE.

The Author.

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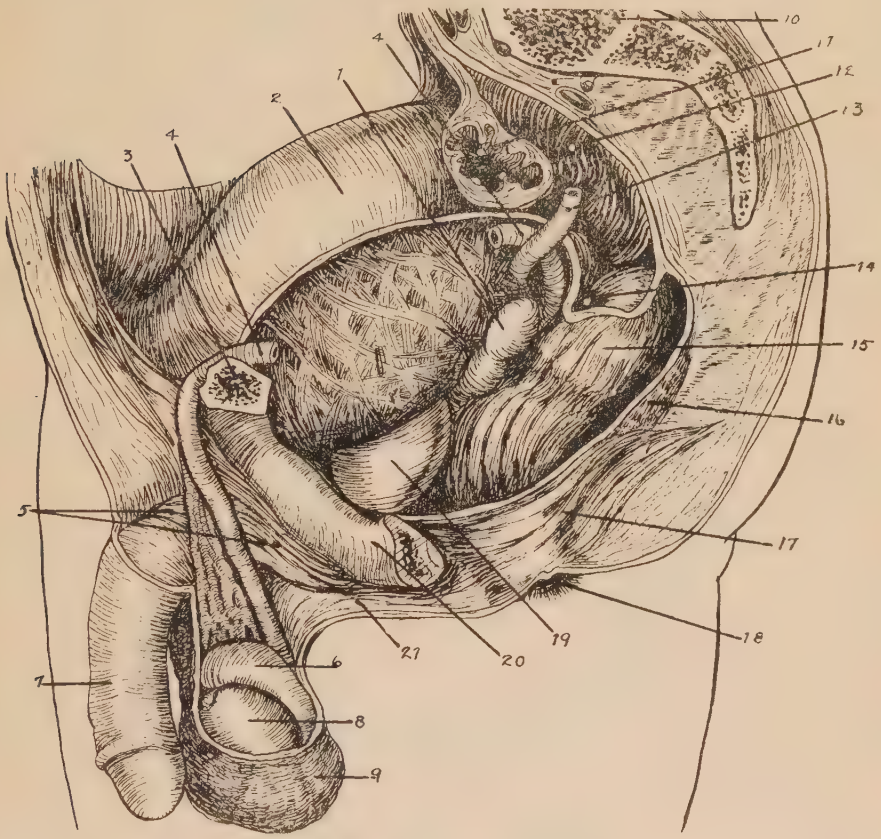

Fig. 1—MALE PELVIS (sagittal section)
(after Spalteholz).

1. Vesicula seminalis.
2. Peritonaeum viscerale.
3. Ramus superior ossis pubis.
4. Ductus deferens.
5. M. ischiocavernosus.
6. Epididymis.
7. Penis.
8. Testis.
9. Scrotum.
10. Vertebra sacralis.
11. Colon sigmoideum.
12. Mesocolon sigmoideum.
13. Ureter.
14. Excavatio rectovesicalis.
15. Intestinum rectum.
16. Diaphragma pelvis.
17. M. sphincter ani externus.
18. Anus.
19. Prostata.
20. Ramus inferior ossis ischii.
21. Perineum.

The Testicles or *testes* are two glandular organs which secrete the basic semen. They are suspended in a cutaneous pouch called the *scrotum*. The testes are suspended obliquely by the *spermatic cords* in the scrotum, to the bottom of which they are loosely attached. The spermatic cords are composed of arteries, veins, lymphatics, nerves, and the excretory of the testicle, through which the semen passes. The average dimensions of an adult testis are from one and a half to two inches in length, one inch in breadth, and an inch and a quarter in the anteroposterior diameter; the average weight is from six to eight drachms, about a half ounce. The left testis hangs somewhat lower than its fellow.

The Epididymis.—Along the posterior border and adjacent portion of the external surface of the testis lies the *epididymis,* a long flattened narrow body consisting of a central body, an upper enlarged extremity, the head or *globus major;* and a lower pointed tail, the *globus minor.* The epididymis is made up of convolutions of the excretory duct of the testis. The *vasa efferentia* connect the testis with the *globus major* of the epididymis; the *globus minor* also is connected with the lower end of the testis by means of cellular tissue and the *tunica vaginalis* or *serous* covering of the testis. Within this covering is the *Tunica Albuginea* or *fibrous* covering of the testis, which invests the numerous lobules of the testis.

Attached to the upper end of the testis, close to the globus major, are two small pedunculated bodies. One is attached by a stalk; the smaller one is sessile. They are called the *Hydatids of Morgagni.* Their function is unknown. Some regard them as vestiges of Mueller's duct.

The testes and part of the spermatic cords are contained within a cutaneous pouch, called the *scrotum.* It is divided into two compartments by the *septum scroti;* each compartment lodges a testis. The integument is thin, dark-coloured, hairy after puberty, provided with abundant sweat glands, and sebaceous follicles, whose secretion has a peculiar odor. The integument in the median line presents a raphé or ridge, corresponding to the symmetry of the bilocular scrotum. This raphé is continuous forward along the under surface of the penis, and backward along the middle line of the perineum to the anus. The scrotum being designed by nature to hold and protect the testes is well equipped for its function.

Lying immediately under the scrotal skin, and closely united thereto, is the *tunica dartos,* a thin layer of loose reddish areolar tissue containing unstriped muscular fibre. The dartos sheathes the whole scrotum, but at the medial line sends in a septum dividing the scrotum into two compartments by a common septum.

Within each compartment the scrotal part of the spermatic cord and the testes are protected by the intercolumnar fascia, the cremasteric fascia, the infundibuliform fascia, and the tunica vaginalis in successive layers proceeding inwardly in the order named.

In a state of vigor the scrotum is short, corrugated, and applied closely to the testes. An elongated flaccid scrotum is an indication of impaired sexual vigor.

The *vas deferens,* the excretory duct of the testis, commences at the globus minor of the epididymis, from which it receives the semen. It is slightly tortuous at first, but soon becomes straight. It ascends along the inner side of the epididymis and curves round the outer side of the deep

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epigastric artery. It dips down on the inner side of external iliac vein and so enters the pelvis under cover of the peritoneum. It now passes backward and downwards upon the lateral wall, crosses the ureter, bends inward downward, then vertically downward upon the base of the bladder

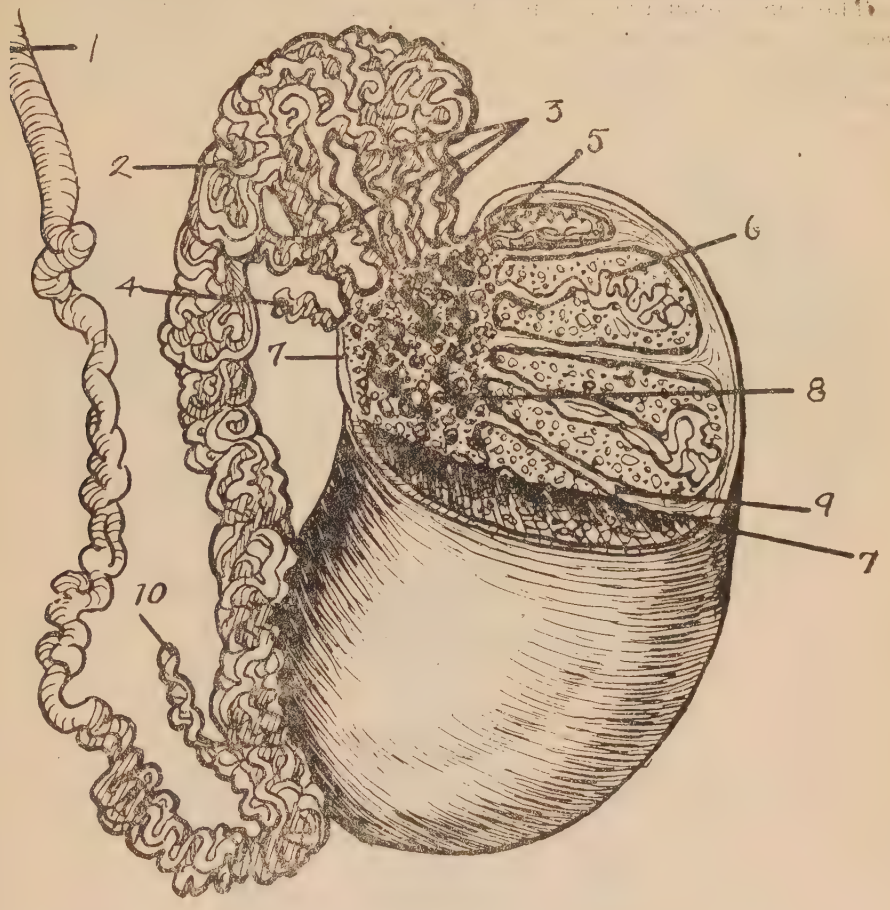

Fig. 2—TESTIS (after Spalteholz).

1. Ductus deferens.
2. Ductus epididymidis.
3. Lobuli epididymidis.
4. Ductulus aberrans superior.
5. Mediastinum testis.
6. Parenchyma.
7. Tunica albuginea.
8. Rete testis.
9. Septulum testis.
10. Ductulus aberrans.

(semi-diagramatic.)

where it lies close to the inner side of the seminal vesicle. This part of the vas deferens lies close to its fellow; both at this point are dilated and sacculated forming the *ampullae*. Just before they enter the prostate gland, both vasa narrow and anastomose with the duct of the seminal vesicle at an acute angle forming one ejaculatory duct. The vas deferens has relatively a thick wall and presents a hard cord-like sensation to the

touch. It is about two feet in length, and about a line and a quarter in diameter.

A line is one-twelfth of an inch.

The lumen of the vas deferens is very small, about half a line.

The vas deferens is one of a group of organs all enclosed within six coverings which envelop them into what is called the *spermatic cord*. The main strands of the spermatic cord are the arteries and the veins and the vas deferens.

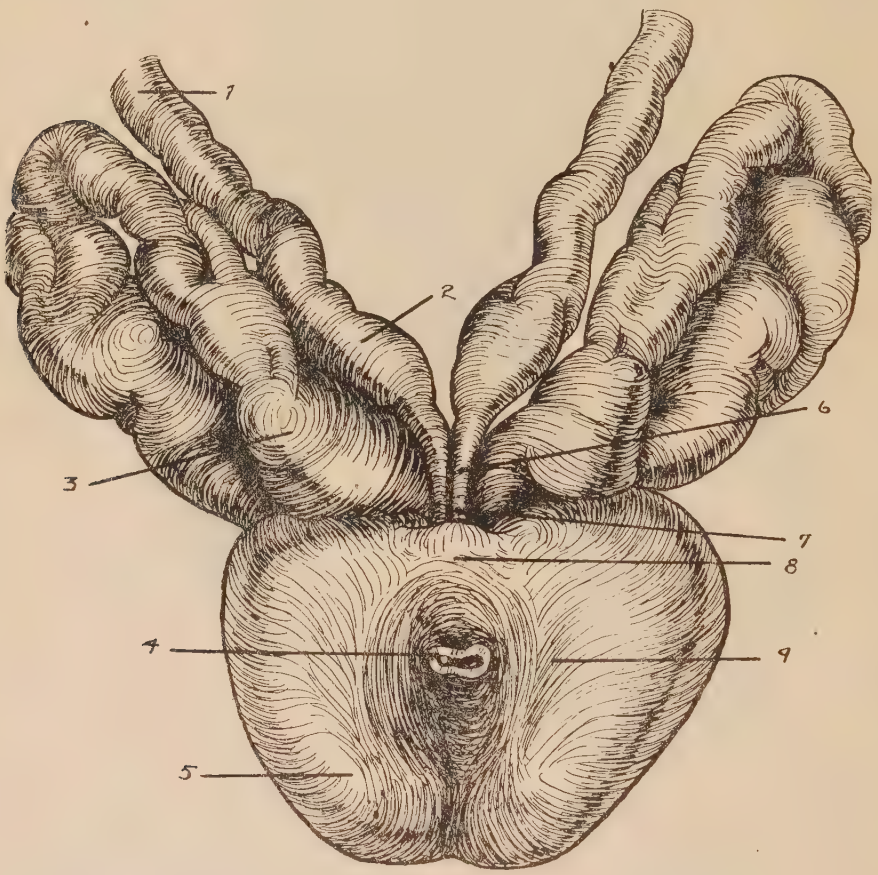

Fig. 3—PROSTATE (after Spalteholz).

1. Ductus deferens.
2. Ampulla ductus deferentis.
3. Corpus vesiculae seminalis.
4. Urethra.
5. Lobus dexter.
6. Ductus excretorius vesiculae seminalis.
7. Ductus ejaculatorius.
8. Isthmus prostatae.
9. Basis prostatae.

The *Vesiculae Seminales* are two in number, and lie between the base of the bladder and the rectum. They are conical, each about 2 inches long, and ½ inch broad at the widest point. The upper larger end of each is free and looks outward. As they descend they converge and join the vasa

deferentia at the upper limbus of the prostate gland. There is a convergence of seminal vesicles into the two vasa deferentia; and in turn, of the two vasa deferentia as they enter the urethra, so that the mingled secretions of the four ducts are poured into the urethra at one point.

Each vesicula seminalis consists of a tube coiled upon itself and giving off several irregular caecal diverticula. The coils are held together by fibrous tissue.

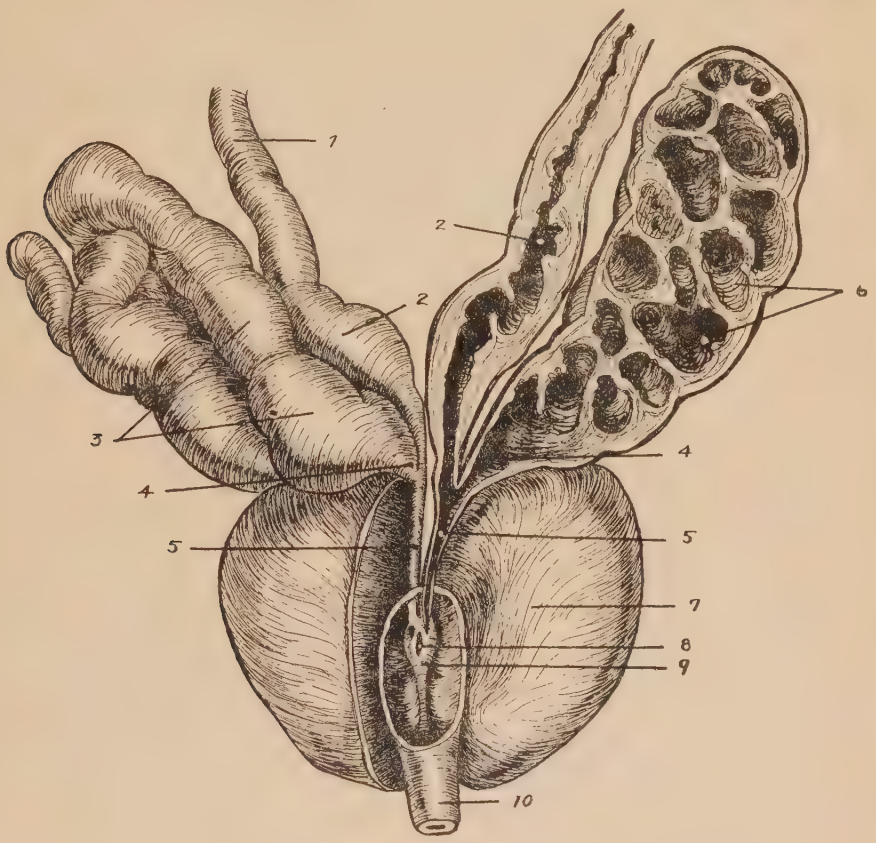

Fig. 4—PROSTATE (after Spalteholz).

1. Ductus deferens.
2. Ampulla ductus deferentis.
3. Vesicula seminalis.
4. Ductus excretorius.
5. Ductus ejaculatorius.
6. Ampulla ductus deferentis.
7. Basis prostatae.
8. Utriculus prostaticus.
9. Colliculus seminalis.
10. Urethra.

The *male urethra* extends from the neck of the bladder to the meatus urinarius at the end of the penis. In the flaccid state of the penis, the urethra descends from the bladder almost vertically through the prostate gland, then curves outward and then downward to the end of the penis. When the penis is erect, there is but one curve, as the outward curve mounts upward, forming one curve, whose concavity is upward. The

length of the male urethra varies from eight to nine inches. It is divided into three portions, the *prostatic, membranous,* and *spongy.* These portions are of different structure.

The prostatic portion lies within the prostate gland and is about 1¼ inches long. It is spindle-shaped; its greatest diameter is one-third of an inch plus. This portion is the most dilatable portion of the whole canal.

The *membranous urethra* is the continuation of the canal from the lower apex of the prostate gland to the commencement of the *corpus spongiosum* of the penis. Its anterior aspect is only about ¾ inch; posteriorly it is only ½ inch in length, because the bulb of the corpus spongiosum posteriorly projects in the direction of the scrotum. Save the meatus urinarius the membranous urethra is the narrowest part of the urinary canal; its average diameter is one-fifth inch. Unskillful catheterization may rupture the thin walls of this narrow passage.

Cowper's Glands, two in number, lie, one on each side of the membranous urethra as it enters the bulb of the corpus spongiosum, which encloses the spongy or penile portion of the urethra.

The *spongy urethra,* about 6 inches in length, is the continuation of the canal to the external orifice called the *meatus urinarius.* In its main portion the urethra is about ¼ inch in diameter, but it has two dilations; one in the aforesaid bulb, and another in the *glans penis.* The latter dilation is called the *fossa navicularis.* The urethra tapers to its narrowest point at the meatus urinarius.

Stricture of the urethra is usually situated in the spongy portion of the urethra. Congenital malformation of the genitalia are very rare.

Hypospadia of a high degree—i. e., congenital opening of the inferior wall of the urethra—and the much rarer *epispadia*—i. e., congenital opening of the upper wall of the urethra—may cause partial or absolute impotence. Hypospadia of the lowest degree—viz., when the orifice of the urethra is situated in the furrow of the glans, at the root of the frenulum—never interferes with copulation, but diminishes the chances of fecundation. In cases of hypospadia of a high degree, when the urethra opens as far back as at the perineum, and the member itself is very small, flattened, and bent downward, both copulation and fecundation suffer as a matter of course.

"Quite similar are the cases of *epispadia.* According to the degree of deformity, the member is at the same time shortened, flattened and turned upward like a hook, so that introduction into the vagina succeeds only partially or not at all, and the injection of semen is accomplished with great difficulty. Exceptionally, impregnation may result in cases of either infirmity, even when of a high degree." (Vecki.)

Epispadia is very rare. Its surgery is not as difficult as that of hypospadia, but still if the incomplete closure of the urethral wall be of such a nature that the semen be not deposited in the vagina, it is a diriment impediment of marriage. Usually there is malformation of the parts within the penis. The corpora cavernosa may underlie the corpus spongiosum.

Hypospadia is balanic if the slit is just behind the glans. This may not interfere with impregnation. In this case surgery is contraindicated.

The farther back the opening, the graver the case. It is sometimes in the prescrotal angle, or even the scrotum may be split. In extreme cases a portion of the urethra is missing. Surgery is difficult and uncertain: several operations may be necessary. Grave hypospadia is a perpetual diriment impediment.

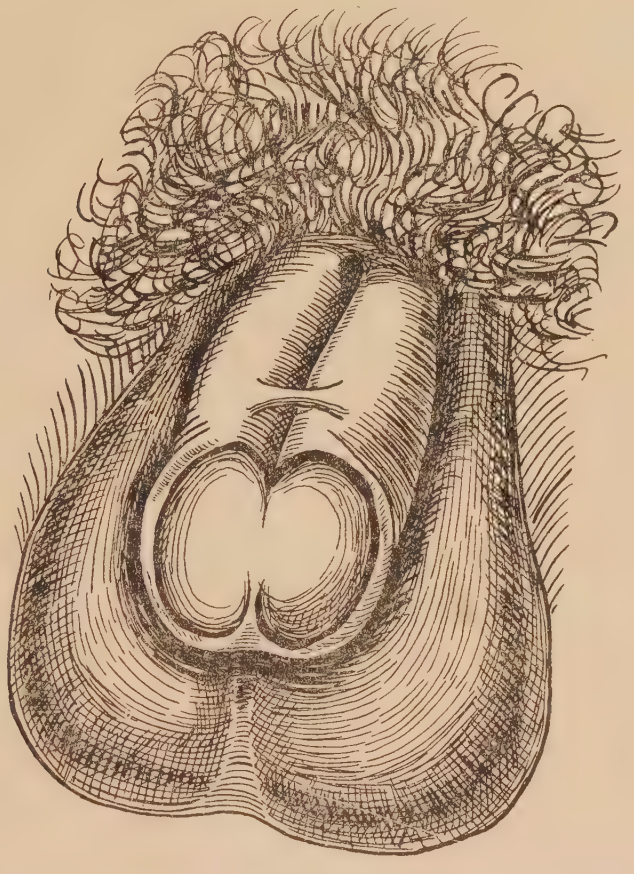

Fig. 5—Type of Epispadias (after Guinard).

Any supervenient malformation or physical impediment has no power to invalidate a valid marriage. But hypospadia or epispadia of such degree that the semen flows out through the malformed urethra, and is not deposited in the genital canal of the woman, is a physical diriment impediment to contract marriage. Though rarely, *per accidens,* the spermatozoa might crawl up to the seat of fecundation, this would not save the validity of the marriage; there must be a normal *capacitas coeundi.*

This physical abnormality is not surgically irremediable, but its surgery is a major operation, and hence in a canonical sense the impotence is perpetual.

Cowper's (William Cowper, English Surgeon, 1666-1709) *Glands* are two small round glands about the size of peas, lying close above the bulb of the urethra, one on each side of the median line. The glands consist of

several lobules, and each gland is furnished with an excretory duct, nearly an inch long, which passes obliquely forward-downward beneath the mucous membrane, and opens, with its fellow, upon the floor of the bulbous portion of the urethra. The secretions of Cowper's glands mingle with the semen as it passes through the urethra. Cowper's glands gradually diminish in size and activity as age advances.

The common opinion is that the *vesiculae seminales* are the *reservoirs* of the accumulated semen. De Lee doubts this position, and inclines to the belief that the dilated sacculated portion of the vasa deferentia, called the *ampulla,* performs that function. The aforesaid ampullae lie bilaterally close to the base of the bladder, close to the seminal vesicles and are with them in communication through ducts. The duct of the vesicula seminalis joins the vas deferens at an acute angle at the base of the prostate gland. There it fuses with the aforesaid duct, and forms one common ejaculatory duct for each vas deferens. There are thus formed two ejaculatory ducts, which pass downward through the posterior portion of the prostate, between the middle and lateral lobes of the aforesaid gland, and enter the prostatic urethra at the *utricle* or *sinus pocularis.*

The walls of the urethra are ridged, in longitudinal folds lying in contact with each other except during the passage of fluid. The male posterior urethral wall presents longitudinally along the middle line a narrow ridge called the *crest.* It is also called the *verumontanum* or *caput gallinaginis.*

It is about ¾ of an inch long. Its greatest elevation is about ⅛ inch. On either side of the crest there is a parallel groove called the prostatic sinus, into which the majority of the prostatic ducts open.

At the fore part of the verumontanum, in the middle line there is a depression or *cul-de-sac,* which runs upward and backward behind the middle lobe of the prostate gland. This blind recess is from ¼ to ½ of an inch in length. It is sometimes called the *sinus pocularis,* vesicula prostatica; and was called by Weber (Moritz Ignatz Weber, German Anatomist, 1795-1875), its discoverer, the *uterus masculinus,* because it is developed from the caudal ends of the Muellerian ducts, and therefore is the analogue of the female vagina. Its function in the male has not been determined.

Prentiss-Arey declares that the term uterus masculinus is a misnomer, because it is only the vaginal portions of the Muellerian ducts, which, in a rudimentary state, remain as the aforesaid pouch in the floor of the male urethra. With good reason he adopts the name, *Vagina Masculina.*

The Prostate Gland.—This gland receives its name from its position in front of the urethral orifice of the bladder. It is partly glandular and partly muscular. In shape and size it resembles a chestnut.

The mean measurements of the prostate are: greatest transverse diameter 1½ inches, vertical diameter from base to apex 1¼ inches, antero-posterior diameter ¾ inch, its average weight is about 4½ drachms. It is situated about 1½ inches from the anus and may easily be palpated through the anus. Enlargement of the prostate is usually thus detected. For convenience of charting the prostate is considered trilobate. The middle lobe may be demarcated, but there is no real demarcation between the lateral lobes.

The prostate gland completely encircles the prostatic part of the urethra, which thus passes through its entire vertical diameter. In this part of the urethra are situate the utricle, the verumontanum, and the prostatic fissures, two in number, through which the ejaculatory ducts pour the semen into the urethra.

In old age the prostate is very apt to become enlarged. This enlargement is commonly called hypertrophy of the prostate. This nomenclature is erroneous, because the enlargement is due to adenomatous masses within the gland. The posterior lobe seems to be reserved as the starting point of cancer.

Prostatitis due to benign enlargement of the prostate is the most frequent disorder of this organ; Carcinoma is rarer, and its prognosis is more unfavorable. In fact definite healings of cancer of the prostate are not recorded. Life may be prolonged by radium and by perineal partial prostatectomy.

The prognosis of benign enlargement of the prostate is favorable. The necessity of the operation springs from the pressure exerted upon the urethra by the adenomatous mass. This narrows the outlet of the urine, giving rise to frequent micturition and to retention of residual urine in the bladder. The pathological condition is aggravated by cold, fatigue, by worry, by long rides, and by alcohol and spicy foods. In fact the prostatic sufferer is affected by the causes that affect the menstruating woman.

Obstruction of the urine by prostatic disease may give rise to a morbid state of mind called prostatism.

If the amount of residual urine be not more than two ounces it is generally disregarded, but a larger amount, especially if it increases, threatens infection of the bladder, back pressure on the kidneys, and uremic poisoning.

Where cancer has invaded the tissues of the genito-urinary tract palliative measures may be employed to soothe and alleviate the pain; a complete healing is not to be hoped for. Sometimes also where the age or physical condition of the patient contraindicates prostatectomy, a catheter life is the only means left to prolong the numbered years. This is a poor make-shift, but it is the last resort.

Age itself would not contraindicate a surgical operation. Men of ninety years of age have successfully undergone prostatectomy.

The vexations, pains, and labor entailed by the constant use of the catheter are very many. The sensitive mucous membrane of the urethra suffers by every introduction of the catheter. Eventually it will become infected. The prostate usually continues to enlarge: surgery or death, or death notwithstanding surgery, is inevitable. The bother of constant catheterization is well nigh insupportable. A day's supply of soft rubber or woven catheters should be boiled and wrapped in a clean towel. The catheters must be carefully washed after use. It is advisable that the patient daily wash his bladder with a solution (2 per cent.) of boric acid. The crisis may come in every man's life wherein a disordered prostate may lay on nature this "weariest and most loathed worldly life." Religion alone can offer hope in the severest cases.

It is well that prostatitis rarely invades the system before the fiftieth year or later. The blight which prostatectomy brings upon the sexual

function is less deplorable since in senility the procreative power has mainly run its course.

In the present state of surgical science prostatectomy is best performed by suprapubic cystotomy.

To remove the prostate while the bladder has been distended constantly by the obstructed urine is condemned by the best surgical opinion. The stretched wall of the bladder suddenly relieved by the removal of prostatic impediment collapses "like a wet paper bag" (Smith); congestion results; and there is danger of the bursting of some of the blood vessels of the affected field. Therefore either suprapubic or indwelling catheter drainage is necessary to prepare the patient for prostatectomy. In suprapubic drainage the relief is immediate but the open bladder freely draining through a drainage tube is free from the dangers aforementioned. This drainage may be continued from eight days to three months, according to the condition of the patient.

In the catheter mode of operation the bladder must not be completely emptied at once.

The ejaculatory ducts are about an inch long. As they are contained within the prostate gland prostatectomy may destroy them, thus cutting off an outlet for the semen to the urethra. The man may retain full virile power; may have perfect erection and orgasm; but the semen is impeded by the rupture of its natural canal and there is no seminal ejaculation. If occlusion of the ejaculatory ducts be complete, the semen will be reabsorbed by the system. If it oozes into the urethra, it gradually drips out through the urethra or mingles with the urine.

Such a man is impotent, and his attempted marriage would be null and void. He would have the power of erection and penetration, and of orgasm, but he could not ejaculate, as is required for valid marriage.

The prostate gland furnishes a secretion called spermin, which stimulates the spermatozoa to action. In fact the sperm elaborated by the testicles needs the secretions of epididymis, seminal vesicles, prostate gland, Cowper's glands, and Littré's (Alexis Littré, French Surgeon, 1658-1726) glands to render it fertile.

It must be conceded that the anatomy of the internal male organs of generation lends probability to De Lee's opinion that the accumulated semen is held in deposit in the ampulla of the vas deferens, and that the seminal vesicles pour into the semen a thick yellowish secretion. They are about two inches long and ½ inch wide at the widest part. They lie between the base of the bladder and the rectum.

Both hypotheses may be wrong. The spermatozoa may not be stored in any reservoir, but elaborated at orgasm immediately by the testes, whence they originate. The testicles alone produce the spermatozoa, but liquids, without which the spermatozoa are inert and sterile, are secreted by the epididymis, the vasa deferentia, the seminal vesicles, the prostate gland, and Cowper's and Littré's glands.

Usually in prostatectomy the ejaculatory ducts are torn away with the prostate gland so that the semen cannot reach the urethra. The prostatectomized man loses no part of his sexual power. If senility have not enfeebled his manhood he secretes semen, has sexual desire, erection, and orgasm, but the semen is occluded at the point where the ejaculatory ducts

are torn. The occluded semen is absorbed by the system. The man is impotent to contract a valid marriage.

If the operation of prostatotomy leaves enough of the prostate gland to function, and leaves intact the ejaculatory ducts, the man is not sterilized, and may contract a valid marriage.

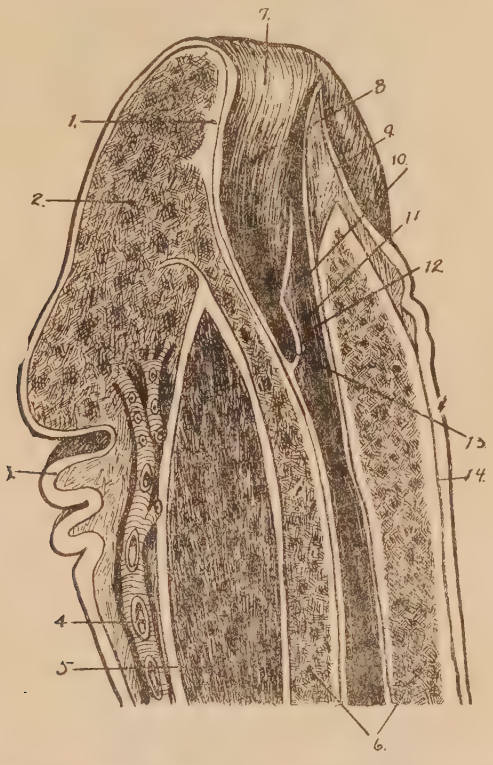

Fig. 6—The penis, distal end, in sagittal section, 2 mm. at left of middle line (after Testut).

1. Distal part of Septum Pectiniforme.
2. Glans Penis.
3. Prepuce Retracted.
4. Dorsal Vein.
5. Corpus Cavernosum.
6. Corpus Spongiosum.
7. Meatus.
8. Fossa Navicularis.
9. Frenum.
10. Frenum valve of Lacuna Magna.
11. Left side of Urethra.
12. Floor of Urethra.
13. Lacuna Magna.
14. Skin.

The diriment impediment of sexual impotence is *inhabilitas ad copulam per se aptam ad prolis generationem.* Complete vasectomy and prostatectomy produce the aforesaid inability.

The Penis consists of a *root, body,* and *glans penis.*

The root is formed by the crura of the Corpora Cavernosa and is firmly connected to the inner margins of the ischio-pubic rami. In front a strong band of fibrous tissue called the *suspensory ligament* connects it with the *symphysis pubis,* the junction of the pubic bones.

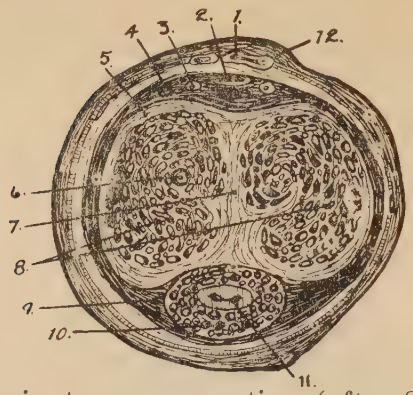

Fig. 7—Penis, transverse section (after Spalteholz).

1. V. dorsalis penis cutanea.
2. V. dorsalis penis.
3. A. dorsalis penis.
4. N. dorsalis penis.
5. Tunica albuginea.
6. A. profunda penis.
7. Septum penis.
8. Corpora cavernosa penis.
9. Fascia Penis.
10. Corpus cavernosum urethrae.
11. Urethra.
12. Integumentum commune.

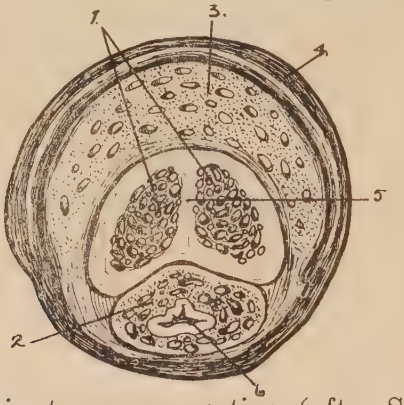

Fig. 8—Penis, transverse section (after Spalteholz).

1. Corpora cavernosa penis.
2. Corpus cavernosum urethrae.
3. Glans penis.
4. Praeputium.
5. Septum penis.
6. Urethra.

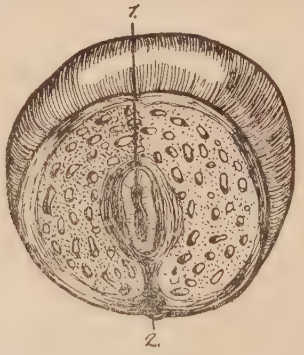

Fig. 9—Transverse section of penis (after Spalteholz).

1. Fossa navicularis urethrae.
2. Septum glandis.

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The extremity or *glans penis* presents the form of an obtuse cone; from its acorn-like shape it has been called *balanus*. The summit of the glans penis is slit vertically by the meatus urinarius. The base of the glans projects in a rounded border, the *corona glandis*. A deep constriction encircles the body of the penis immediately behind the corona: this is called the cervix, but is not differentiated by anything save its constriction.

The corona glandis is furnished with numerous small sebaceous glands called the *glandulae odoriferae of Tyson* (Edward Tyson, English Anatomist, 1649-1708). They secrete a whitish sebaceous matter of strong peculiar odor. This is sometimes called *smegma* (unguent) *praeputii*. It is easily decomposed and becomes foul smelling and irritant. Cleanliness of the organ is an aid to morality, because the odor and irritation of the decomposing smegma is a sexual excitant.

A corresponding secretion, subject to the same laws, is found in the female labia pudendi.

The body of the penis is the portion between the root and the extremity. The flaccid penis is cylindrical, but when erect it presents a prismatic form with rounded edges: the dorsum or upper surface is broadest.

A thin, loose, integument continuous with the covering of the pubes and scrotum sheathes the penis, and at the free extremity of the gland becomes doubled back upon itself to the constriction behind the gland. This duplicature is called the *praeputium penis, prepuce,* or *foreskin*. The under part of the prepuce is connected with the under surface of the gland by a fold of mucous membrane called the *frenum praeputii*.

Three cylindrical bodies form the main part of the body of the penis. Two of these bodies are fellows, the *corpora cavernosa*. Two strong fibrous processes called the *crura* penis, firmly anchored to the os pubis and ischium proceed forth side by side and intimately connected along the median line of the penis till they fuse into a rounded end which enters the fossa at the base of the glans penis. The dorsal vein of the penis lies in the upper median groove; the corresponding underlying groove lodges the corpus spongiosum, within which the urethra is enclosed.

The corpora cavernosa are divided into minute compartments by *trabeculae*. These interspaces freely communicate with each other and are filled with venous blood. The trabeculae are of plain muscular fibres and of erectile fibres.

A strong fibrous envelope invests each corpus cavernosum; and another fibrous envelope longitudinal in direction invests both corpora in a common sheath.

The corpus spongiosum begins in a bulb situate between the diverging crura of the corpora cavernosa. Thence it proceeds along the under groove upon the septum between the corpora cavernosa till it terminates in the glans penis. The urethra lies nearer its upper surface. It is a trabecular structure enclosed in a strong fibrous envelope. Its meshes are erectile.

The penis is richly supplied with blood vessels and nerves. The extreme sensitiveness of the glans is due to the Pacinian corpuscles, or end organs of the cutaneous nerves. These round end-bulbs or nerve endings have been studied by Krause.

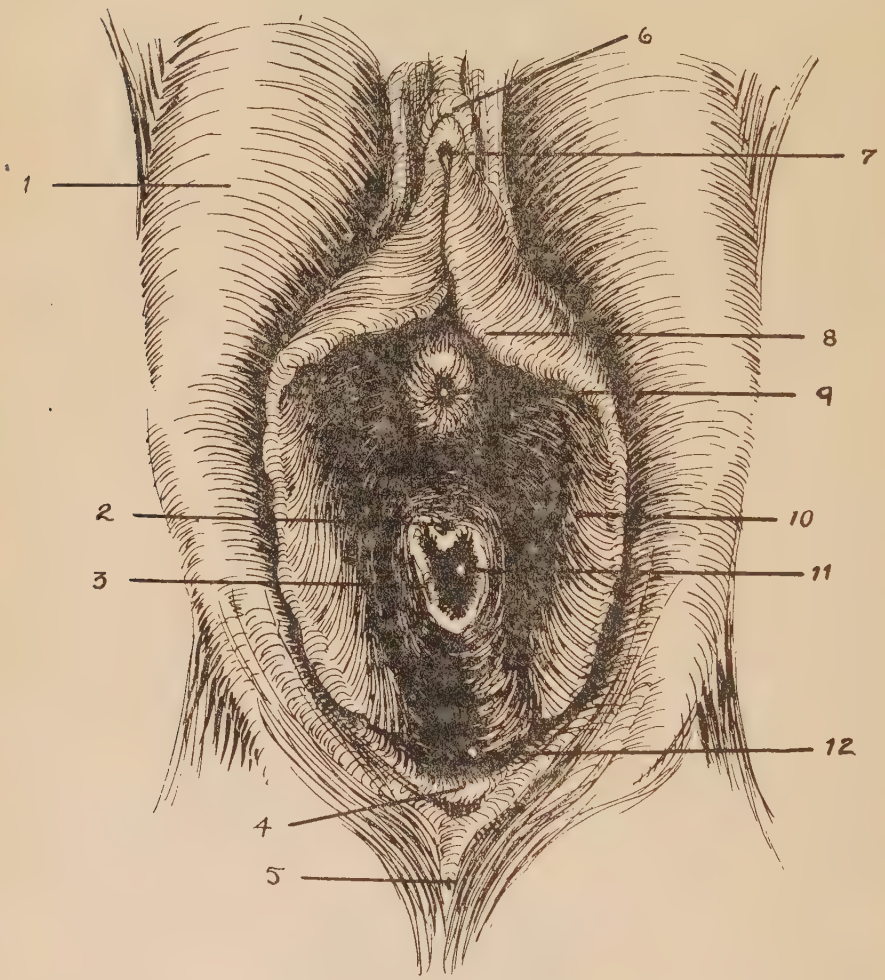

Fig. 10—FEMALE GENITALIA (after Spalteholz).

1. Labium majus pudendi.
2. Carina urethralis (vaginae).
3. Hymen.
4. Frenulum labiorum pudendi.
5. Raphé perinei.
6. Praeputium clitoridis.
7. Glans clitoridis.
8. Labium minus pudendi.
9. Orificium urethrae externum.
10. Vestibulum vaginae.
11. Orificium vaginae.
12. Fossa navicularis (vestibuli vaginae).

The Female Organs of Generation are the *mons Veneris*, the *labia majora*, the *labia minora* or *nymphae*, the *clitoris*, the *hymen*, the *glands of Bartholin* (Thomas Bartholin, Dutch Anatomist, 1616-1680), the Vagina, the Uterus, the Fallopian Tubes, the Ovaries, and the *bulbi vestibuli*.

The *mons Veneris* is a round eminence in front of the *symphysis pubis*. It is composed of adipose tissue beneath the integument: at puberty pubic hair appears on the integument.

The *labia majora* are two prominent longitudinal folds of integument extending downward from the mons Veneris to the anterior boundary of the perineum proper. The length of each is about three inches. They enclose the common urino-sexual opening. Anteriorly they are thick and round and form the *anterior commissure*, where they unite and become continuous with the mons Veneris. Posteriorly they diminish in thickness until they become lost in the common integument about an inch in front of the anus. This point is called the *posterior commissure*.

This is the posterior boundary of the vulval orifice or *rima pudendi*.

The outer surface of the labia majora is pigmented and, after puberty, anteriorly is covered with strong, crisp hair. The posterior portion is devoid of hair.

The inner surface of the labia majora is smooth, hairless, beset with large sebaceous follicles. The round ligament of the uterus loses itself in the labium majus.

When the body is erect the rima pudendi is almost horizontal antero-posterior.

In the healthy virginal state the labia majora are plump and closed, forming what is called the *vulva clausa*, or *vulva connivens*.

The vulva clausa is accepted in canonical procedures as a subsidiary *nota virginitatis*.

At the posterior junction of the labia majora there is a small crescentic fold of the uro-genital lining called the *fourchette* or *frenulum pudendi*.

The labia majora are the homologue of the scrotum.

The *labia minora* are two narrow folds of modified integument extending about an inch and a half on each side of the uro-genital space. Each labium minus lies internal to the corresponding labium majus, with whose inner surface its outer surface is in contact. The inner surface of the labium minus touches the corresponding inner surface of its fellow. The skin of this inner surface is extremely delicate and sensitive.

Anteriorly the labia minora meet at the anterior angle of the vulva. At this point the labia minora form two lamina, of which one forms the frenum of the clitoris, and the other lamina forms the prepuce or hood of the clitoris.

Posteriorly the labia minora gradually decrease in size, and become lost in the labia majora. They are well supplied with sebaceous glands, but no fat or sweat glands.

Normally the apposed labia majora completely hide the labia minora.

In the ordinary positions of the nulliparous woman the mons and the labia majora are the only parts of the external genitals visible without separation of the parts (Lewis and de Roulet). In multiparous women and in certain pathologic states they may protrude through the uro-genital

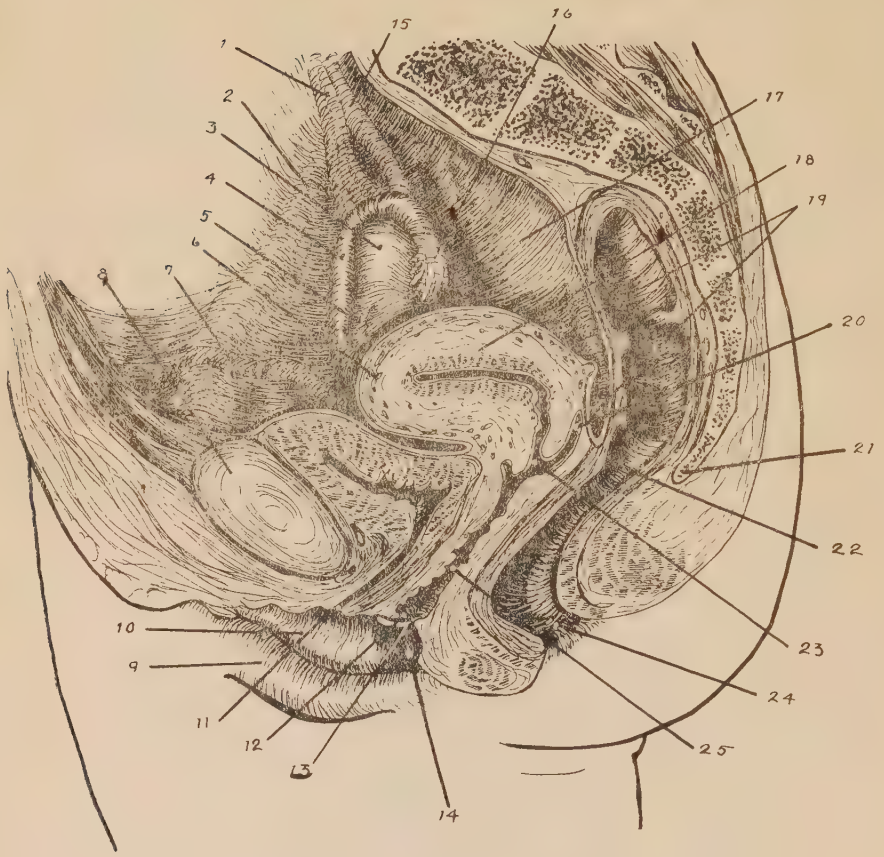

Fig. 11—FEMALE PELVIS (sagittal section)
(after Spalteholz).

1. Lig. suspensorium ovarii.
2. V. iliaca externa.
3. Ovarium sinistrum.
4. Ampulla tubae uterinae.
5. Lig. ovarii proprium.
6. Fundus uteri.
7. Lig. teres uteri.
8. Symphysis ossium pubis.
9. Labium majus pudendi.
10. Labium minus pudendi.
11. Orificium urethrae externum.
12. Orificium vaginae.
13. Hymen.
14. Vestibulum vaginae.
15. Ureter.
16. Infundibulum tubae uterinae.
17. Peritonaeum parietale.
18. Uterus.
19. Plica rectouterina.
20. Fornix vaginae.
21. Os coccygis.
22. Intestinum rectum.
23. Orificium externum uteri.
24. Anus.
25. Vagina.

cleft. Manipulation may produce a hypertrophy of the labia minora. Extreme hypertrophy is called *Hottentot's Apron*. Ethnologists report that in some Hottentot women the labia minora protrude from between the labia majora and hang well down upon the thighs. Undoubtedly this is due to sexually motivated manipulation.

Hypertrophy of the labia is a morbid enlargement or overgrowth of these folds.

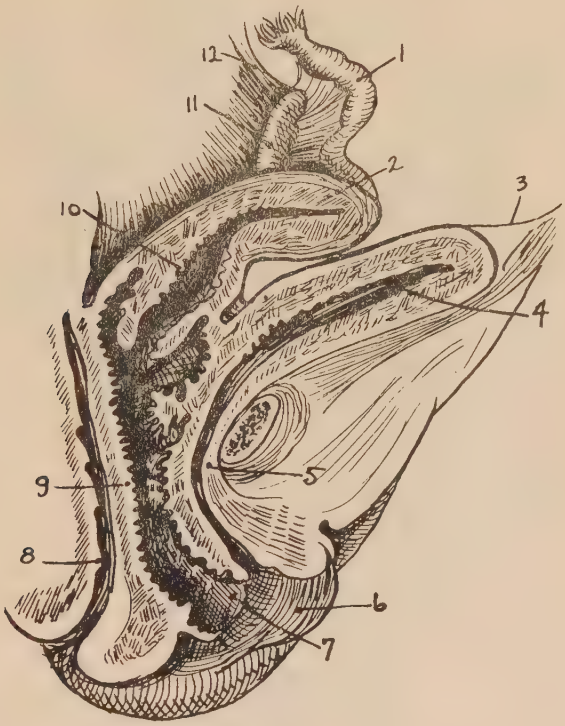

Fig. 12—Medial sagittal section of Reproductive Organs of an infant (from Toldt).

1. Fallopian Tube.
2. Body of Uterus.
3. Peritoneum.
4. Urinary Bladder.
5. Urethra.
6. Vestibule of the Vagina.
7. Hymen.
8. Rectum.
9. Vagina.
10. Neck of Uterus.
11. Ovary.
12. Suspensory Ligament of Ovary.

Elephantiasis of these parts is an inflammation and obstruction of the lymphatics producing an aggravated hypertrophy of the skin and subcutaneous tissues.

This condition may render coitus impossible. It is rare in Europe and America, but is more frequently found in Persia, Turkey, and parts of Africa. It easily yields to surgery. The operation is as simple as circumcision of the male.

The opposite extreme is found in some women whose labia are undeveloped, or adhere. If the condition results from general undevelopment, there is no specific remedy. Adhering labia are surgically operable.

In coitus the labia minora lubricate the vagina, grasp the male organ, and aid to retain its ejaculation. They are also a part of the seat of sexual sensation. In frigid women they are usually deficient.

Fig. 13—Hottentot Apron (from Zweifel).

The *clitoris* is an erectile organ analogous to the penis. It is situate in the uro-genital space, a little posteriorly to the anterior commissure. The clitoris is composed of two corpora cavernosa and a gland, but has no lumen. Its body, about 1½ inch long, lies hidden between the anterior extremities of the labia minora. The free protruding tubercle is called the *glans clitoridis*. It varies much in size, but is often no larger than a kernel of wheat. In normal cases it may be likened to a split pea.

The gland is imperforate. The clitoris is erectile and is the most sensitive part of the female sexual apparatus. Its erectibility is however much feebler than that of the penis. It is well said that the clitoris may be considered a very diminutive penis, minus the corpus spongiosum and the urethra.

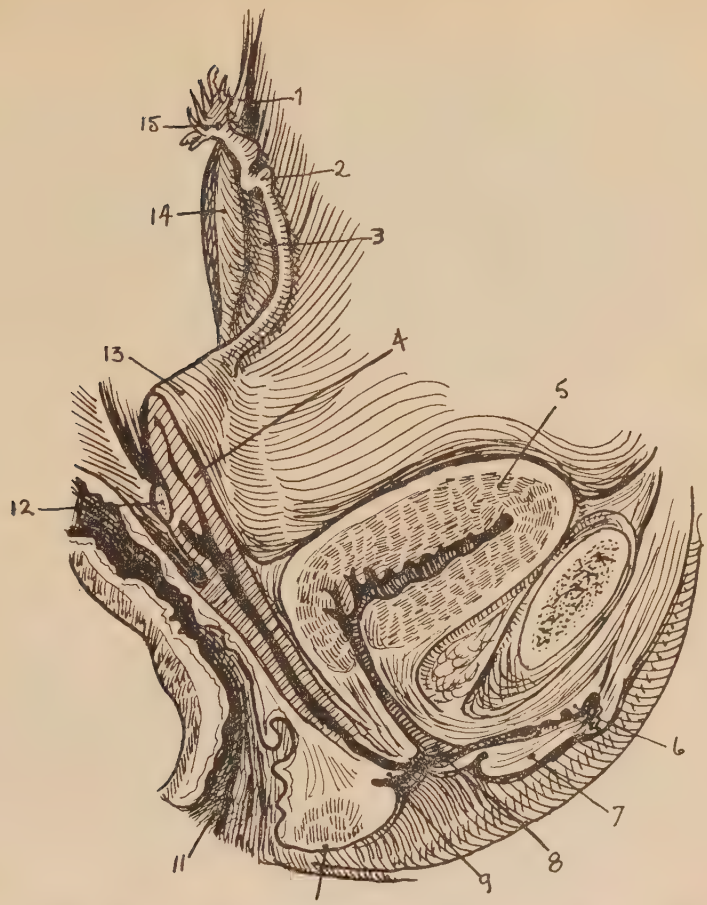

Fig. 14—Median sagittal section of Reproductive Organs of girl aged ten (from Toldt).

1. Suspensory Ligament of Ovary.
2. Fallopian Tube.
3. Mesosalpynx.
4. Neck of Uterus.
5. Urinary Bladder.
6. Glans Clitoridis.
7. Labium Majus.
8. External Orifice of Urethra.
9. Hymen.
10. Perineum.
11. Anus.
12. Uterosacral Ligament.
13. Body of Uterus.
14. Ovary.
15. Infundibulum of Fallopian Tube.

The Clitoris has been called the *throne of female sexual love.* Descourtilz found the negresses of Arada very amative and fertile. He declares that with them the clitoris is very prominent, reaching at times a length of six and a half inches.

The organ may be overdeveloped by masturbation and by *cunnilinctus.*

Garnier denies to the clitoris the leading rôle in female sexual love. He has found amative and fertile women with atrophied clitorides.

The truth seems to be that it is a leading erogenous source, but not sole.

In turgescence it bends downward.

Clitoridectomy has been operated as a remedy of female masturbation. Unless a pathological condition exists, it is, in the author's judgment, contraindicated. It is a mutilation that renders a woman less a woman; and is ineffectual to cure the vice. The author has never found a case where clitoridectomy or circumcision of an adult male was effectual against masturbation.

Between the clitoris and the entrance to the vagina is a triangular smooth surface about an inch long laterally bounded by the labia minora. This is called the *vestibule.* At the back part of the vestibule in the middle line, near the margin of the vagina the mucous membrane rises from the floor of the vestibule, and in this slight prominence is the *meatus urinarius* of the *female urethra.*

The female urethra is much shorter than the male urethra. It is not surrounded by the dense resisting structures which invest the corresponding male organ. Thus it is more easily dilated. Its length is about 1½ inch, and its diameter about ¼ inch. Its course is downward and forward; its walls are anterior and posterior; and these walls are in contact except during micturition.

Extremely rare cases of epispadia and hypospadia are found in the female. They are embryonic defects. In the female they essentially differ from the analogous defects of the male. In the female the urethra may be absent, or through a fissure may discharge the urine into the vestibule or through the abdominal opening. Physicians report rare cases in which the urine was emitted through the umbilicus.

Incontinence of urine usually attends on such cases. Some cases yield to surgery: other cases are incurable.

The orifice of the vagina is situate immediately behind the vestibule. It is an elliptical antero-posterior cleft, which in a virgin is normally more or less closed by the *hymen.*

The *hymen,* also called *maiden-head,* varies much in form and strength. The most usual form is the ring-shaped: next to that the crescent hymen is the most usual form. Normally it is a thin membranous fold stretched across the posterior portion of the external orifice of the virginal vagina. In the semilunar type the concave border is directly forward and upward. The normal hymen occludes from one-third to one-half of the vaginal orifice, but occasionally it stretches over the entire opening. An *imperforate hymen* occludes the entire opening. Such a membrane is pathologic, and demands surgery.

When the hymen is stretched over the entire opening of the vagina but is pierced by small apertures it is called a cribriform *hymen.*

A rare case is the *hymen septus,* in which the opening is divided by a septum.

Sometimes the hymen is stretched over the entire external orifice of the vagina, but is anteriorly posteriorly slit. The lips of this slit may overlap and hide the orifice. As the membrane is elastic, such a hymen may permit the entrance of the penis without hymenal laceration.

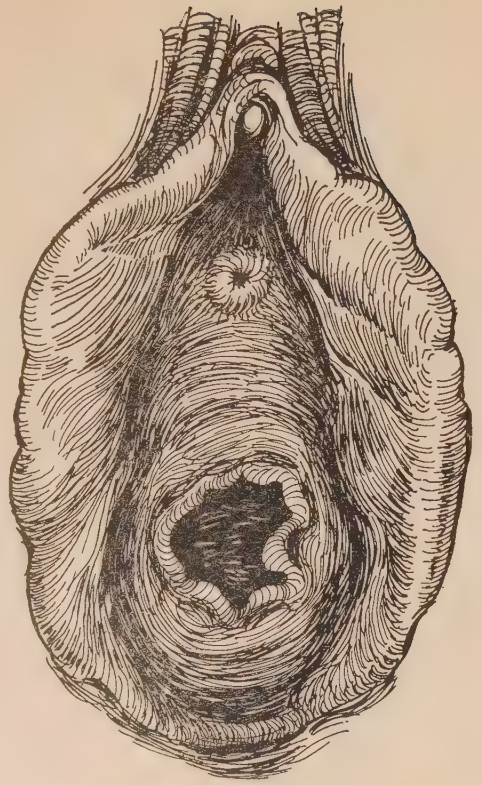

Fig. 15
Hymen, Circular, Slightly Notched.
(Lewis and de Roulet)

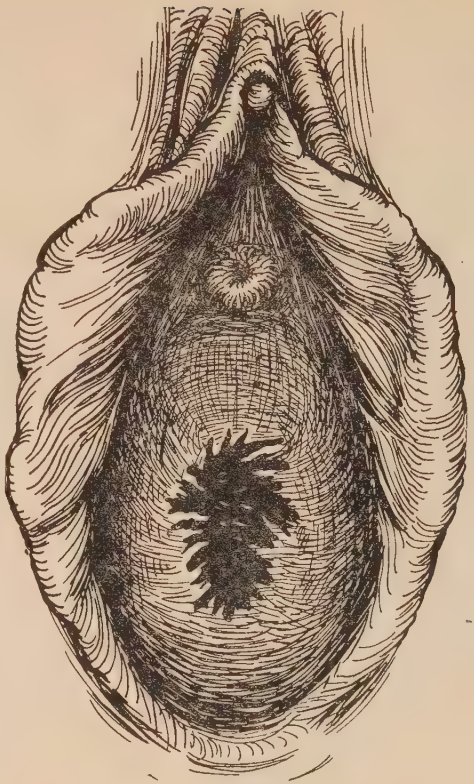

Fig. 16
Hymen, Fimbricated.
(Lewis and de Roulet)

Fig. 17
Hymen, Semilunar.
(Lewis and de Roulet)

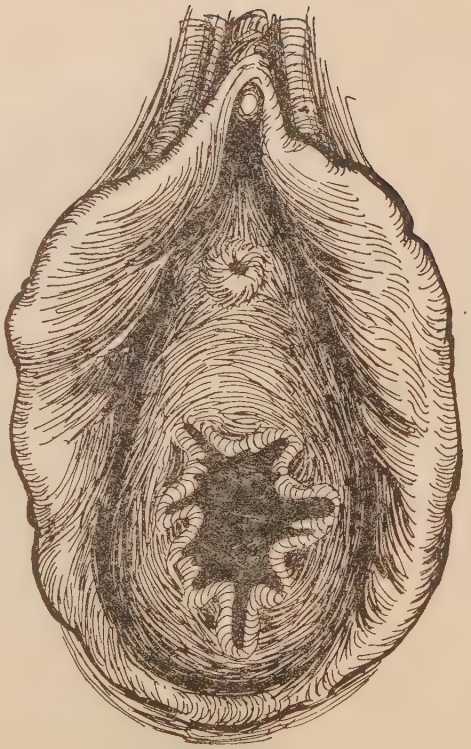

Fig. 18
Hymen, Deeply Notched.
(Lewis and de Roulet)

Fig. 19
Hymen, Imperforate.
(Lewis and de Roulet)

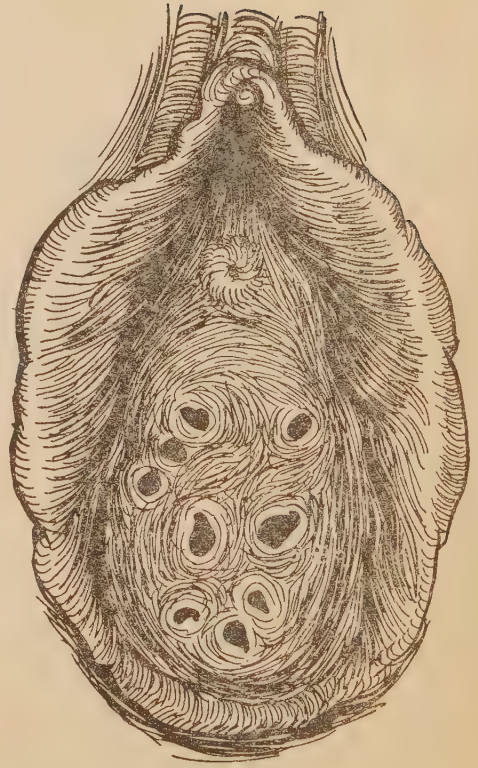

Fig. 20
Hymen, Small Perforations.
(Lewis and de Roulet)

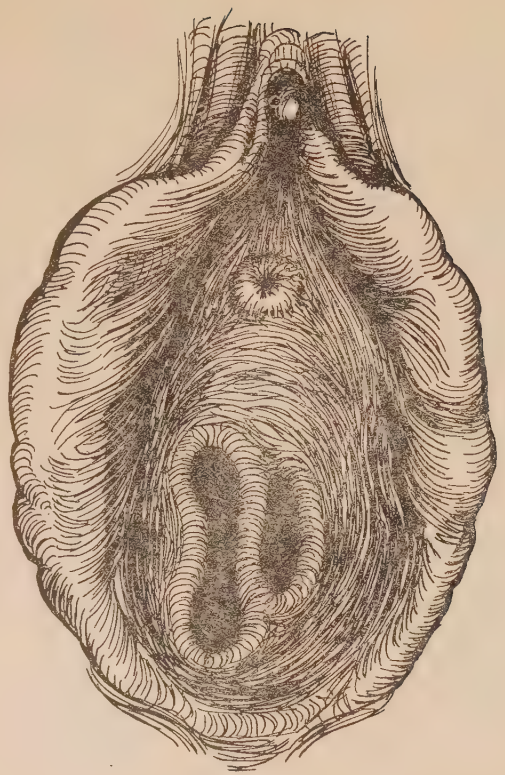

Fig. 21
Hymen, Septus or Divided.
(Lewis and de Roulet)

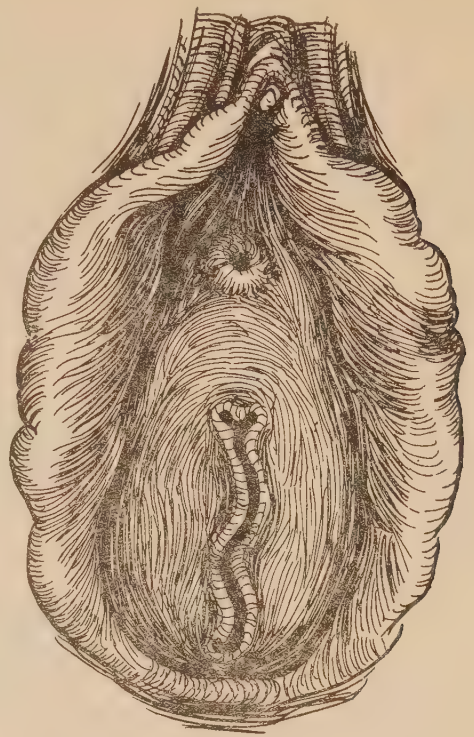

Fig. 22
Hymen, Slit.
(Lewis and de Roulet)

In its most usual form the opening in the hymen will scarcely admit the surgeon's finger. In most cases therefore it is torn in the first coitus. Defloration is attended by some pain and a slight hemorrhage. Parturition lacerates the hymen beyond recognition. The ragged remains heal, and form the *carunculae myrtiformes,* small elevated scars surrounding the vaginal orifice. They are mucous excrescences.

Sometimes the hymen is congenitally absent. Sometimes it may slough away by disease or be destroyed by violent exercise or by accident. Its condition therefore, though the usual sign of virginity, cannot be considered an absolute test of the same.

The hymen may persist after coitus. Dr. Budin, in a course of observations which covered three months, examined seventy-five primiparae. Of these he found thirteen with intact hymen.

Rare cases of an excessively tough hymen have been found in young girls.

In women of 35 years and upward it is normally tough. This may prevent coitus. The attempted coitus may simply push the membrane up into the vagina without penetration. If the hymen is imperforate or the opening is very small, the menstrual flow is occluded partially or entirely. This is a pathological condition demanding prompt surgery. Also surgery should be invoked in cases where coitus is impossible. The operation is simple.

Between the hymen and the fourchette is a small depression called the *fossa navicularis* of the vulva.

"Extending from the clitoris along either side of the vestibule and lying a little behind the nymphae, are two large oblong masses, about an inch in length, consisting of a plexus of veins enclosed in a thin layer of fibrous membrane. These bodies are narrow in front, rounded below, and are connected with the crura of the clitoris and rami of the pubes: they are termed by Kobelt the *bulbi vestibuli,* and he considers them analogous to the bulb of the corpus spongiosum in the male." (Gray). They are about 1 inch long.

The *glands* of *Bartholin* are two oblong racemose glands about the size of a small bean situate at the posterior margin of the bulbi vestibuli, on each side of the entrance to the vagina. Each gland is furnished with a duct about ¾ inch long which opens in the angle between the site of the hymen and the posterior attached border of the nympha, close to the center of the margin of the vaginal orifice. These glands are also called the vulvovaginal glands: they are analogous to Cowper's glands. During sexual excitement they discharge a relatively considerable amount of mucous secretion.

The *perineum* is the outlet of the pelvis. It comprises an area bounded in front by the rami of the pubic bones and ischia meeting in front at the pubic arch; bounded posteriorly by the tips of the coccyx; bounded laterally from behind forwards by the inferior border of the great sacro-sciatic ligament, the tuber ischii, and ischio-pubic ramus. In the posterior portion of the perineum about 1½ inch anteriorly to the coccyx is the anus. The external sphincter muscle of the anus controls the opening and closing of the anus.

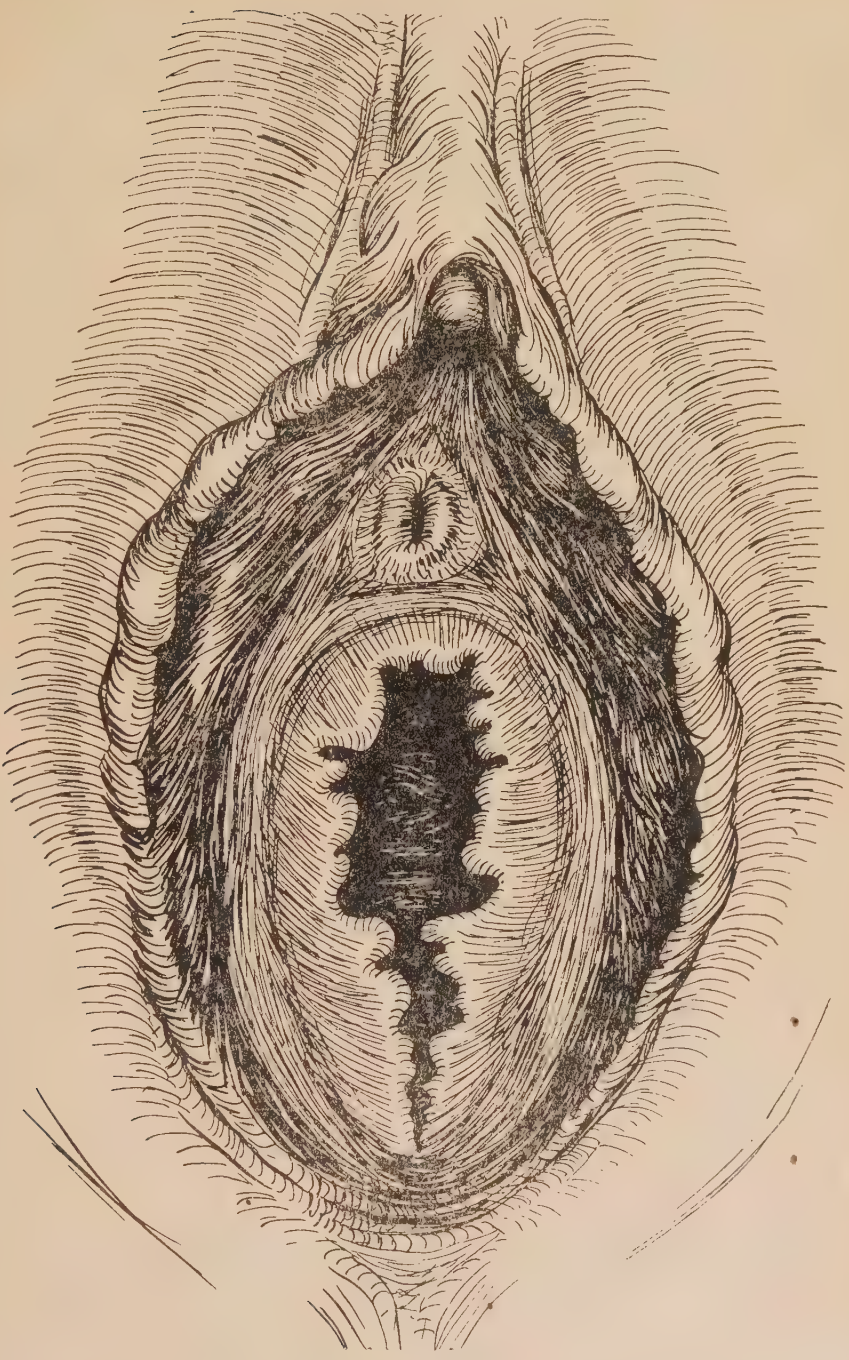

Fig. 23—Laceration of hymen, post coitum.
(After Lewis and de Roulet)

It is conventional to divide the male perineum into the ischio-rectal division and the uro-genital or urethral division by an imaginary line running transversely from the ischial tuberosities. The uro-genital portion is the male perineum proper. In this portion in the male lie the male organs of generation.

The *female perineum* is divided into three divisions: (1) the uro-genital, (2) the perineum proper, and (3) the ischio-rectal. The ischio-rectal is as in the male. The uro-genital division comprises the anterior part from the pubic arch to the posterior boundary of the uro-genital cleft. The perineum proper extends from this boundary of the uro-genital cleft to the anus.

The *vagina* is a muscular-membranous canal, which extends from the inner surface of the slit of the vulva to the cervix of the uterus. Its axis forms an obtuse angle with the axis of the uterus. When the body is erect, the course of the vagina slants posteriorly at an angle of about 60 degrees. The vagina traverses the pelvic cavity behind the bladder, and in front of the rectum. Its walls are ordinarily in contact.

The lower portion is the narrowest part of the lumen; it becomes medially dilated, but narrows near its uterine extremity.

From its outer orifice upward throughout most of its extent a transverse section of the vagina presents the form of the letter H, in which the bars of the letter represent the lumen. As it ascends towards the uterus its furrowed character tends to merge into rotundity.

Owing to the obtuse angle at which the cervix uteri dips into the vagina, the posterior wall of the vagina rises higher than the anterior wall. In a normal vagina this posterior wall is about 3½ inches long. The anterior wall is about ½ inch shorter.

The anterior wall of the vagina extends up and insheathes the anterior outer surface of the vaginal portion of the uterus. There is thus formed a slight recess called the *anterior fornix*. A similar but deeper recess is formed higher up by the posterior vaginal wall: this is called the *posterior fornix*.

The lower part of the vagina is surrounded by the compressor vaginae muscles and by bands derived from the levator ani section of the pubo-coccygeus muscle. This musculature constricts the vaginal entrance.

The wall of the vagina is composed of three coats. The outer coat is fibrous, composed of dense connective tissue. Inside of this is a plain muscular coat. The muscular coat at the entrance to the vagina is replaced by the compressor vaginae or sphincter vaginae already described. This muscle diminishes the orifice of the vagina. The action of this muscle, whether voluntary or uncontrollable, may prevent the consummation of marriage.

The inmost coat of the vagina is mucous.

Between the muscular coat and the mucous coat and ramifying into them is a layer of erectile tissue, in which is imbedded a plexus of large veins. The vascular supply of the vagina is abundant, as is also its nerve supply.

The vagina normally contains an acid secretion, which renders it immune to pathogenic germs. This acid kills vast numbers of the spermatozoa; but as their number is incredible, provision is made by nature

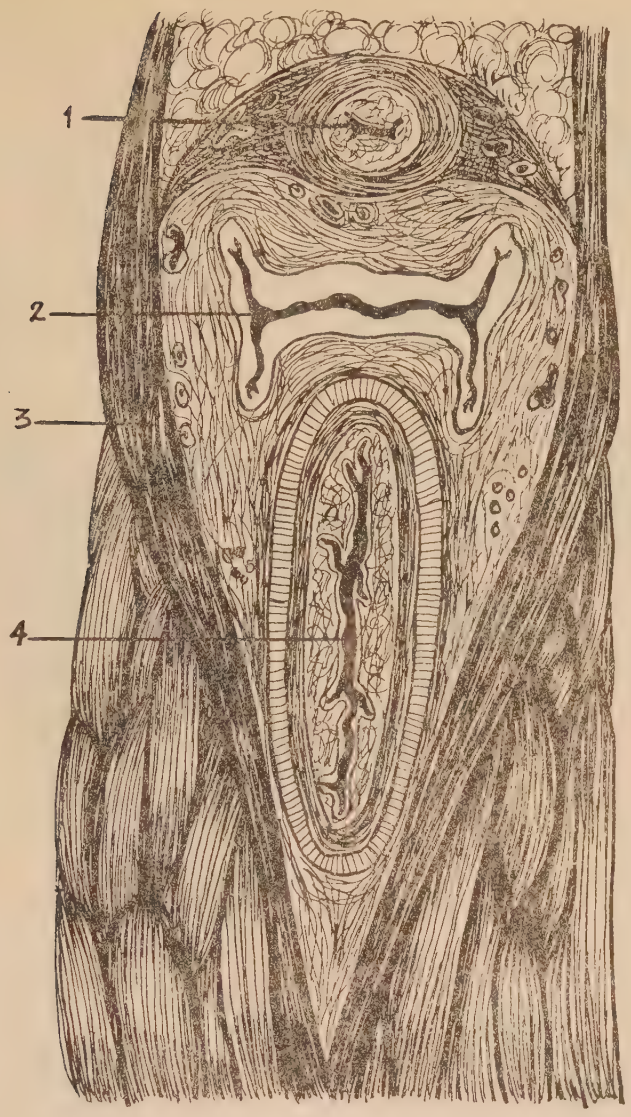

Fig. 24—Horizontal section of Vagina and adjacent structures showing H shaped vagina (after Prentiss-Arey).

1. Urethra. 2. Vagina. 3. Levator ani muscle. 4. Rectum.

that impregnation is effected by one who reaches the uterus and tube, whose secretion is alkaline, and therefore a fit medium for the life of the spermatozoa.

Beside the four longitudinal furrows before mentioned, sometimes called the columns of the vagina, the organ is furnished with numerous transverse rugae, both front and back. They are prominent in the virgin: repeated parturition reduces them: old age obliterates them.

The *uterus* is the essential organ destined by nature to receive the ovum; to harbor and nourish the impregnated ovum during its antenatal existence; and to expel the fetus at term. Its size varies according to the age and sexual condition of the woman.

The virginal uterus is pear-shaped with stem directed obliquely downward. It is anteroposteriorly flattened. Its average length is 3 inches; its widest diameter 2 inches; its anteroposterior diameter 1 inch. The normal uterus weighs less than two ounces.

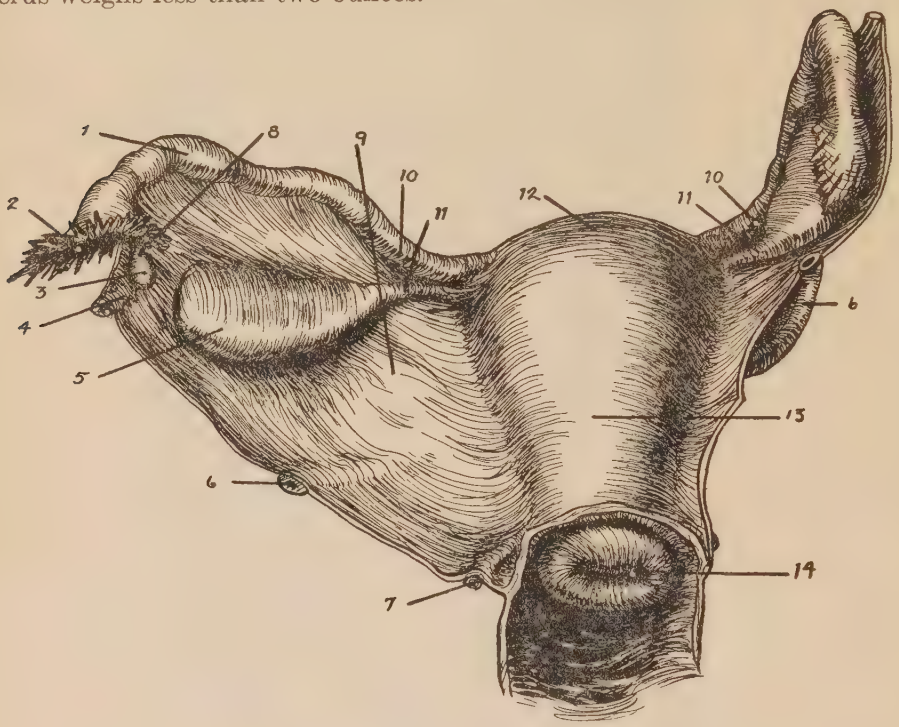

Fig. 25—UTERUS and OVARIES (after Spalteholz).

1. Ampulla tubae uterinae.
2. Fimbriae tubae.
3. Appendix vesiculosa.
4. Ligamentum suspensorium ovarii.
5. Ovarium sinistrum.
6. Ureter.
7. M. rectouterinus.
8. Fimbria ovarica.
9. Mesometrium.
10. Isthmus tubae uterinae.
11. Lig. ovarii proprium.
12. Fundus uteri.
13. Uterus.
14. Orificium externum uteri.

The uterus is divided into a *fundus, body,* and *cervix.*

The *fundus* is the proximal portion of the uterus lying above the level of the line of entrance of the *Fallopian tubes* through the uterine wall.

The body of the uterus lies between the fundus and a constriction called the *os internum.*

At this point the *cervix* or *neck* of the uterus begins.

The body of the uterus is about 2 inches long.

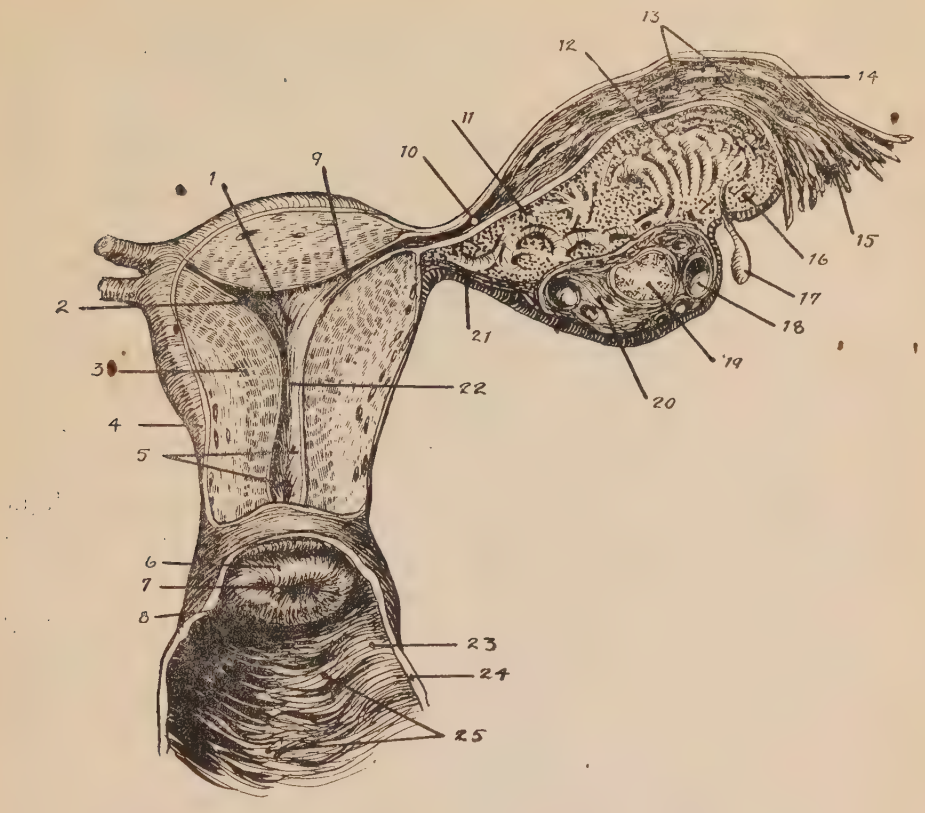

Fig. 26—Posterior section of UTERUS and OVARIES (after Spalteholz).

1. Cavum uteri.
2. Tunica mucosa.
3. Tunica muscularis.
4. Tunica serosa.
5. Plica palmata.
6. Labium posterius.
7. Orificium externum uteri.
8. Labium anterius.
9. Ostium uterinum tubae.
10. Isthmus tubae uterinae.
11. Mesosalpinx.
12. Ductuli transversi.
13. Plicae ampullares.
14. Ampulla tubae uterinae.
15. Fimbria tubae.
16. Fimbria ovarica.
17. Appendix vesiculosa.
18. Folliculus vesiculosus.
19. Corpus luteum.
20. Ovarium dextrum.
21. Lig. ovarii proprium.
22. Canalis cervicis uteri.
23. Tunica mucosa.
24. Tunica muscularis.
25. Rugae vaginales.

The cervix, about 1 inch long, is cylindrical and narrower than the body of the uterus.

The three clinical divisions of the cervix are: (1) *supravaginal portion,* viz., all that portion that lies between the aforesaid constriction where the cervix begins, and a point of the cervix opposite to the fundus of the posterior fornix. The depth of this portion is about ½ inch.

The *median portion* of the cervix, less than a quarter of an inch in depth, extends down to a point opposite the fundus of the anterior fornix.

The distal extremity of the cervix lies entirely within the vagina, and is called the *vaginal portion.*

At the lower end of the vaginal portion is the *os externum uteri,* through which the cavity of the uterus communicates with the vaginal canal. It is sometimes called *os tincae,* from its supposed resemblance to the mouth of the tench.

This os is completely closed in the virgin by the circular muscular fibres. Its virginal shape is circular. It is lacerated by the passage of a fetus, and heals into a gaping transverse slit with rough edges.

The cavity of the cervix where it arises as aforesaid is called the *os internum uteri.* This is generally the narrowest part of the uterine cavity. Thus the cavity of the cervix is spindle-shaped.

The mucous membrane of the cervix is sharply differentiated from that of the vagina.

The cervical mucous membrane is thrown into numerous oblique ridges or corrugations, which diverge from an anterior and posterior longitudinal raphé or ridge, presenting a tree-like appearance, which receives the name *arbor vitae,* or *plicae palmatae.*

The mucous membrane of the cervix is thicker and firmer than that of the uterus. Instead of the tubular glands of the uterus, the cervix has mucous crypts. These are called the *Nabothian Follicles.* Some of these are occluded: the occluded crypts are called the *Nabothian cysts.* All the crypts secrete a clear, viscid, alkaline mucus: sexual excitement stimulates this secretion and may cause its ejaculation in jets.

The lining membrane of the cervix is called the cervical endometrium or *endocervix.*

The uterus is supported by *eight ligaments.*

The *broad ligaments,* two in number, are the main-ligamentary support of the uterus, ovaries, and Fallopian tubes. They extend laterally from the uterus to the walls of the pelvis, thus anchoring the uterus to the pelvic walls. The Fallopian tubes and the ovaries lie at different levels within the broad ligaments. The ampulla however of each tube floats free.

The portion of the broad ligament which lies between the Fallopian tube and the ovary is called the *mesosalpinx.*

The *mesovarium* attaches the anterior border of the ovary throughout its whole length to the back of the broad ligament.

Uterus, Ovaries, and Tubes are richly supplied with arteries: hemorrhage of these is often fatal.

The *round ligaments* are two strong fibromuscular structures, which run from the horns of the uterus, just in front of the attachment of the Fallopian tubes, to the inguinal canal, and thence emerging they end in the subcutaneous tissue of the upper part of the labia majora. They are about 5 inches in length.

The *uterovesical ligaments* are two anterior folds passing from the uterus and cervix to the bladder and forming between uterus and bladder the uterovesical pouch.

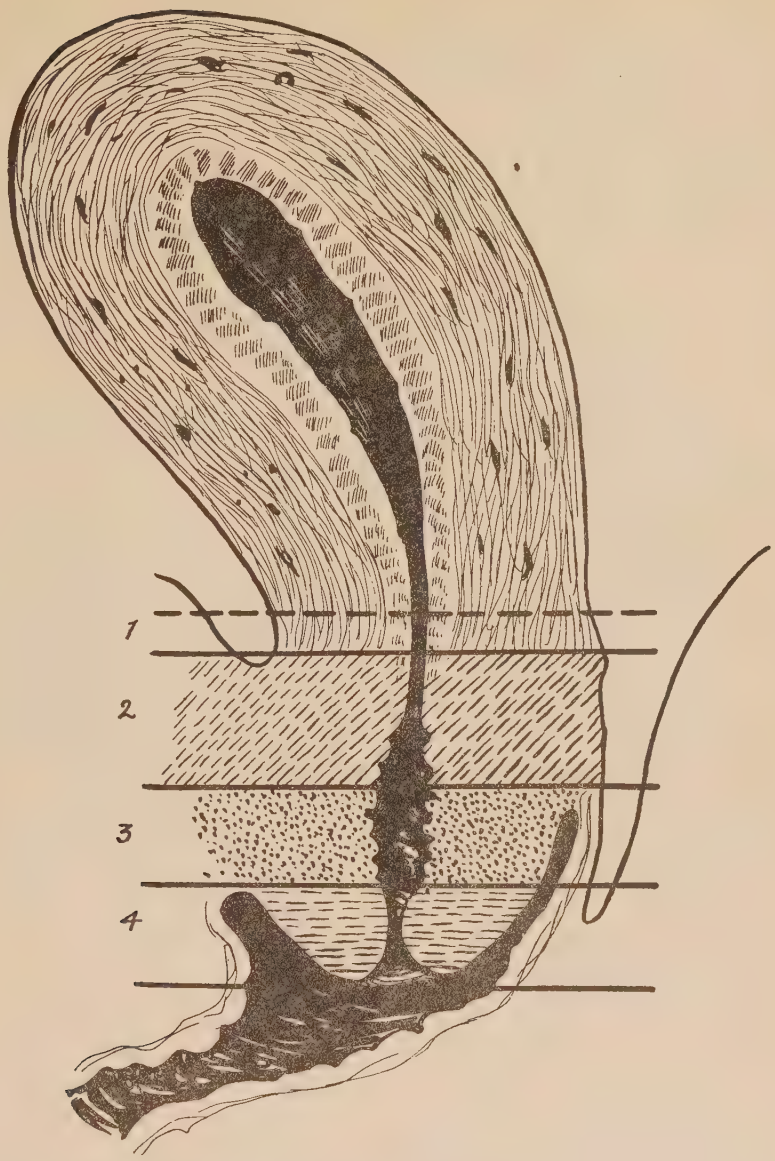

Fig. 27—Clinical Divisions of CERVIX and ISTHMUS (after De Lee).

1. Isthmus. 2. Supravaginal portion. 3. Median portion. 4. Vaginal portion.

The *uterosacral ligaments* are the posterior analogues of the aforesaid. Thus the uterovesical and uterosacral ligaments act as a sling to swing the uterus between the sacrum and the pubes.

The distal ends of the uterovesical ligaments are reflected upon the bladder: the uterosacral ligaments pass from each side of the cervix to the

sacrum at the sacroiliac joint, forming between them the pouch of *Douglas*. This pouch is a cul-de-sac, which in the usual positions of the woman is the lowest part of the peritoneal cavity. It is thus by the law of gravitation a frequent seat of infection.

The wall of the uterus is composed of three coats: the *external serous,* the *muscular coat,* and the *internal mucous coat.*

The serous coat is derived from the peritoneum: it invests the exterior surface of the uterus save the anterior face of the cervix.

The *muscular* coat forms the chief bulk of the substance of the uterus. It consists of three layers of unstriped fibres, running in many directions, and giving to the coat the appearance of a woven texture. The muscular coat is very tough but dilatable. It is thinnest where the Fallopian tubes enter at the horns.

The mucous membrane or *endometrium* in the quiescent state is thin, smooth, velvety, perforated by the opening of numerous small glands. It is continuous through the os uteri with the lining of the vagina, and also continues throughout the tubes.

"The *mucous membrane* of the *cavity of the body* is smooth and soft in consistence, and is covered by ciliated columnar epithelium. It is beset with a number of openings, which are the mouths of the *uterine* or *utricular glands.* These are simple tubular glands, which extend in a somewhat convoluted manner through the entire thickness of the mucous coat, and project by their deep blind ends into the inner muscular stratum, there being no submucous coat. Each gland is composed of a basement membrane, which is lined with ciliated columnar epithelium, continuous with that of the cavity of the body. Each has a distinct lumen, except at its deep end where it is filled with cells." (Buchanan)

The endometrium thickens during the congestive period of menstruation, and after the flow returns to normal state.

In pregnancy it undergoes important changes which shall later be described.

The cavity of the uterus in its normal state is small in comparison with the size of the organ.

In the normal state the walls of vagina, cervix, and uterus are apposed.

In general the peritoneum is a strong serous membrane lining the abdominal walls and investing the enclosed viscera. In the male it is a closed sac, but in the female it is continuous with the mucous membrane of the Fallopian tubes.

The *Fallopian Tubes* or *oviducts* convey the ova from the ovaries to the cavity of the uterus. The average length of each tube is about 4 inches. They consist of *serous* or *peritoneal coat, muscular coat,* and the *inner mucous membrane.* The mucous membrane or *endosalpinx* is arranged in extensive complicated longitudinal folds so thin that the cylindrical ciliated epithelial cells lie close to each other in the small amount of delicate connective tissue. The wall of the Fallopian tube is thickest at the isthmus, where it reaches a thickness of about one millimetre.

The limited portion of the Fallopian tube which lies within the uterine wall is called the *pars uterina:* it opens into the uterus through the *ostium uterinum tubae.* The diameter of the lumen of this part of the tube is about one millimetre: it will barely admit a fine bristle.

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Proceeding outwardly from the uterus the *isthmus* of the tube succeeds to the pars uterina. This is the strongest part of the tube, due to the predominance of circular muscular fibres. It is about 2½ millimetres in diameter.

The distal end of the tube is called the *ampulla*. In the ampulla the diameter of the tube gradually increases up to 7 millimetres. As it nears its distal termination it narrows to about 2 millimetres, forming the *ostium abdominale*.

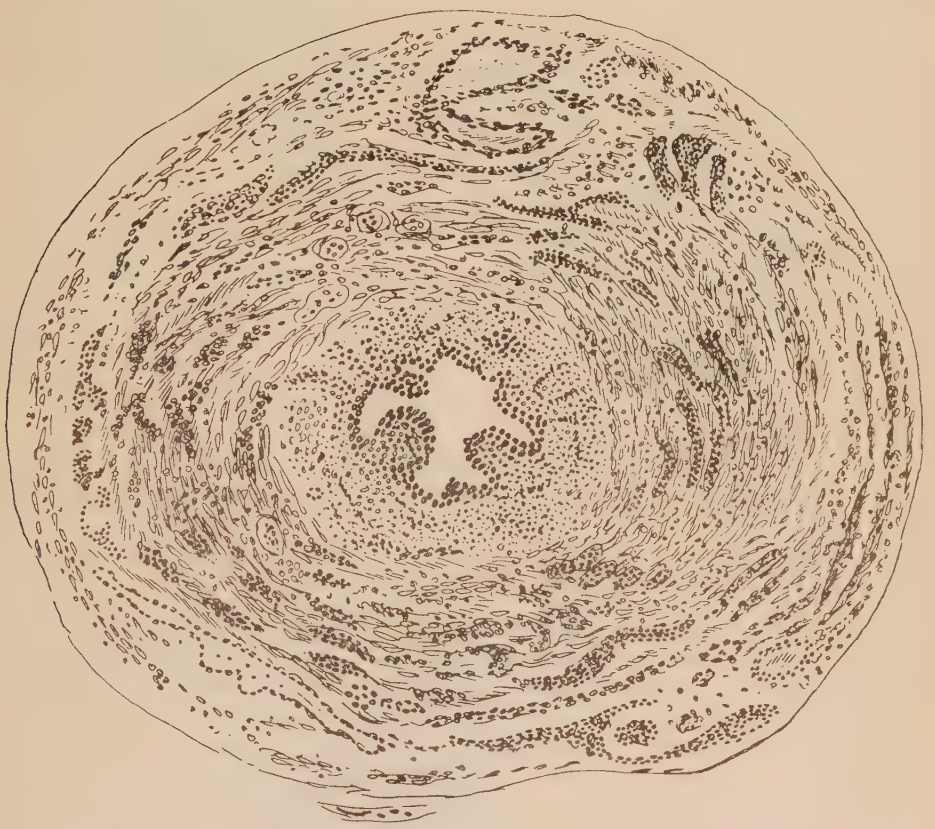

Fig. 28—Cross section of Tube near Uterus (from De Lee).

Beyond the ostium abdominale or neck the tube expands into a funnel-shaped extremity called the *infundibulum*. The periphery of the funnel is fimbricated or fringed with irregular *fimbriae*. One of the fimbriae, which is larger and longer than the others, is attached to the ovary. It is called the *fimbria ovarica*. This fimbria serves as a channel of communication between the ovary and the tube.

The cilia of the tubes stroke toward the uterus. The cilia of uterus and cervix stroke downwards to the vagina. The spermatozoon always moves against the ciliary current to reach the ovum.

The cilia of the tubes promote the passage of the impregnated ovum into the uterus.

The *ovaries* of the woman were called by Galen the *testes muliebres,* from their analogy to the male sexual glands. In fact "in origin and early development the *ovary* and *testis* are identical". Moreover, "the *external genitalia* of both sexes are similar until the beginning of the third month of development, when the indifferent anlages become moulded into sexually distinct organs". (Prentiss-Arey) Of course, in the mind of the Creator the differentiation is determined: from the moment of conception the sex of the fetus is fixed.

From the same anlage or embryonic aggregation of cells development proceeds without any discernible differentiation at first but then gradually differentiating until the male sexual system results in the male fetus and the female system in the female fetus.

This process sometimes obliterates or reduces to rudimentary, apparently non-functioning remains in one sex, that organ which becomes prominent in the other sex.

More frequently two homologous organs are formed of vastly different functions. The *glans penis* and *glans clitoridis* are homologous.

The labia minora are remotely homologous to the anal surface of the penis, but in the male the phallic folds have closed about the primitive urogenital opening.

The anlage which forms the mons pubis and labia majora of the female disappear in the male.

The prostate gland is only rudimentary in the female.

The scrotum is remotely represented in the female by the posterior commissure.

The glands of Cowper, also called *bulbo-urethral* glands, are homologous to the glands of Bartholin.

The ovaries are more than organs of reproduction; they are the chief organs of sex characteristics. Besides the production of the ovum the ovary has an internal secretion which influences the woman's physical and psychical being.

Age and individual characteristics cause a wide range of variation in the ovary.

The normal organ is flattened elliptical, whose average size is about 1½ inch long, ¾ inch broad, one-third inch thick. They are densely fibrous organs situate in the *fossa ovarica,* a narrow pouch on the posterior surface of the broad ligament. Each ovary is connected to the broad ligament by a peritoneal fold called the *mesovarium.* It is connected to the uterus by the *ovarian ligament;* its fimbria ovarica establishes a line of communication between it and the ampulla of the tube.

"The ovary consists of a number of Graafian follicles imbedded in the meshes of a stroma or framework, and is invested by a serous covering derived from the peritoneum." (Gray)

Up to puberty the surface of the ovary is smooth: ovulation covers the surface with depressed scars. In old age it atrophies, presenting the appearance of a shriveled mulberry.

The Graafian follicles (discovered by de Graaf in 1672) are described under oögenesis.

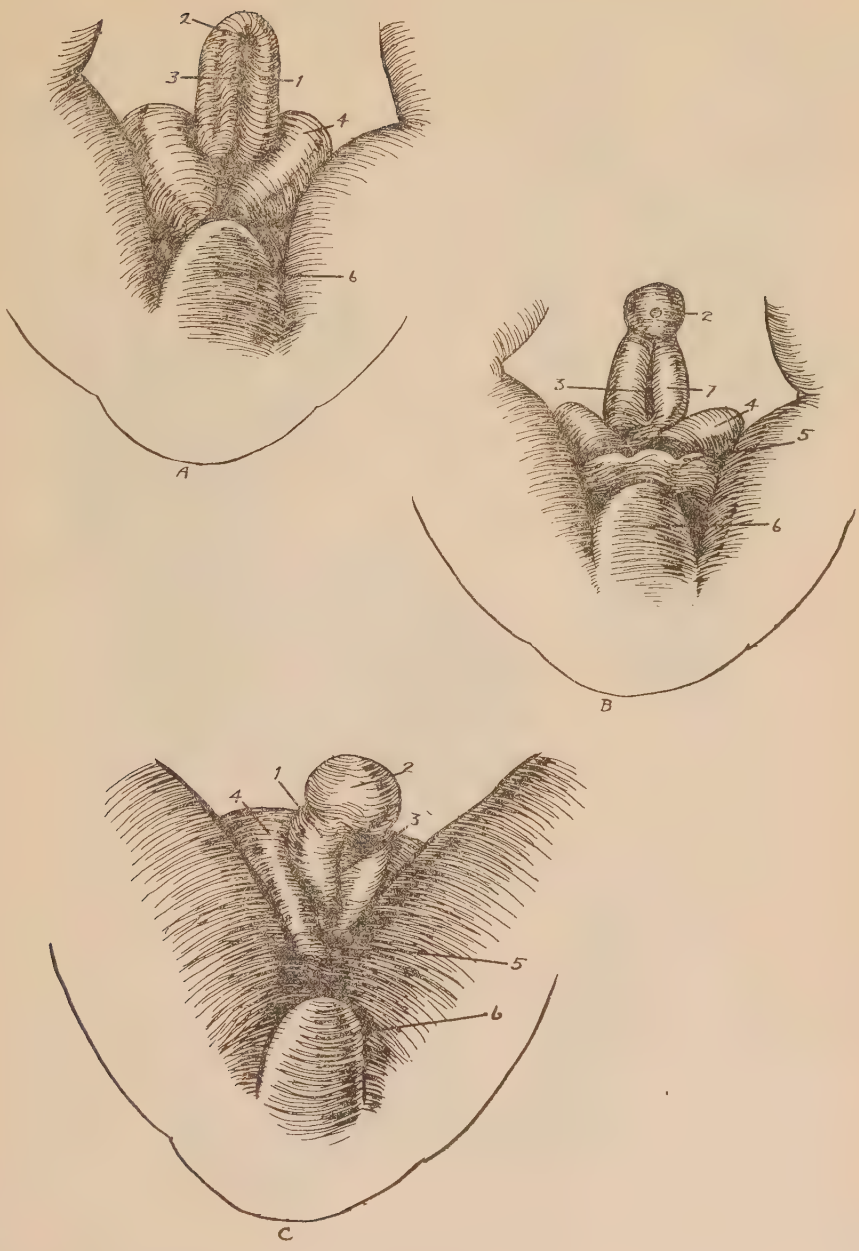

Fig. 29—Three stages in the development of the external genitalia in human embryos of 24 to 34 mm. (after Tourneux in Heisler). Indifferent stage: 1, Phallus; 2, Glans, 3, Primitive urogenital opening; 4, Genital tubercle or swelling; 5, Anus; 6, Coccyx.

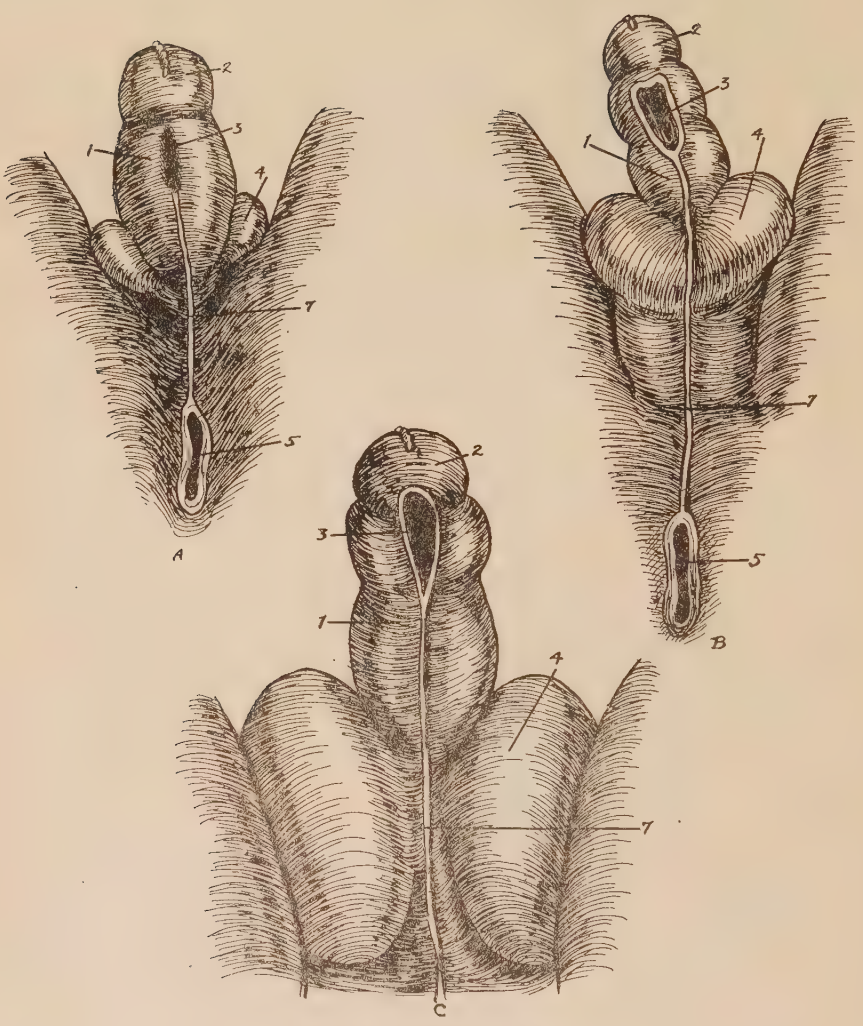

Fig. 30—Three stages in the development of the male external genitals (after Tourneux in Heisler). 1, Penis, 2, Glans; 3, Urogenital groove; 4, Genital swellings corresponding to labia majora of female; 5, Anus; 7, Scrotal area with perineoscrotal raphé.

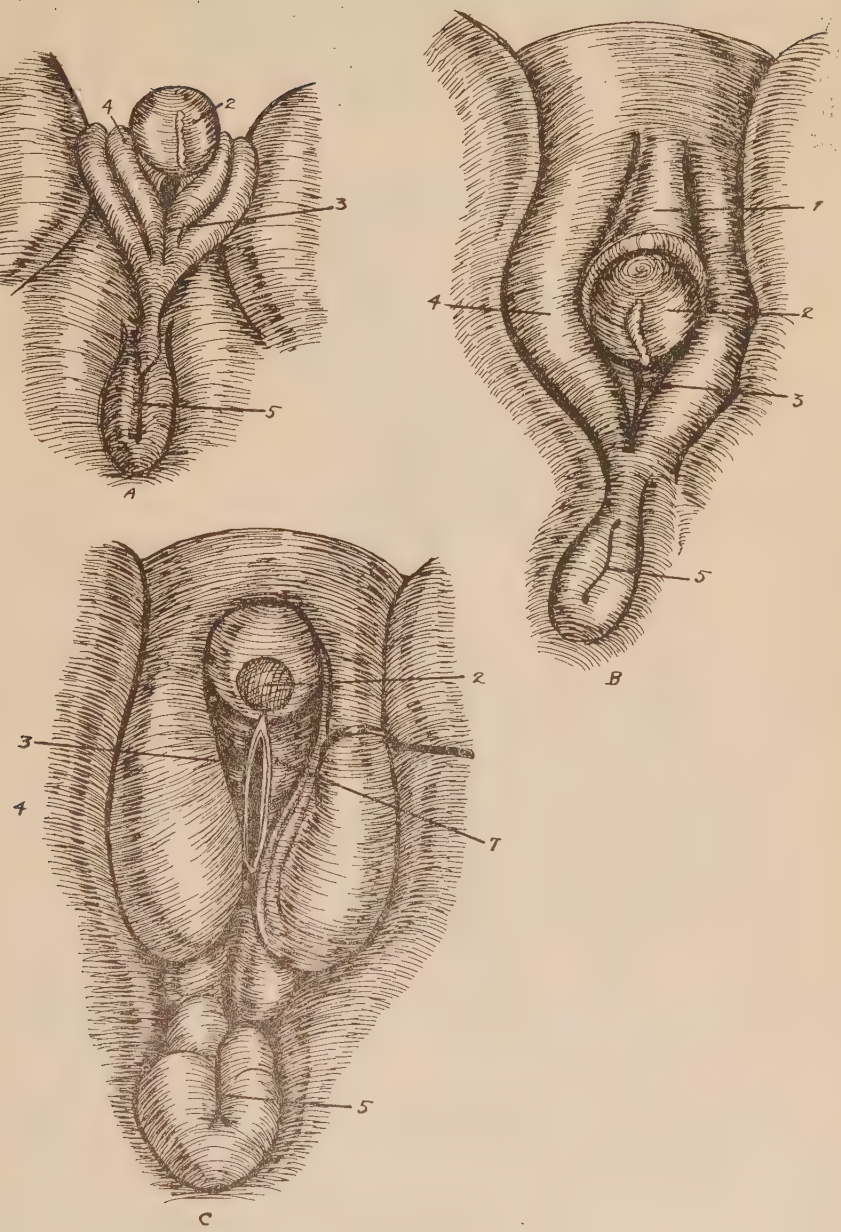

Fig. 31—Three stages in the development of female external genitalia (after Tourneux in Heisler). 1, Clitoris; 2, Glans clitoridis; 3, Urogenital aperture, on each side of which are the labia minora; 4, Labia majora; 5, Anus; 7, Labia minora.

The *Mammae* or *Breasts* exist in the male only in the rudimentary state. In the female they are two large hemispherical eminences, extending vertically from the second to the sixth rib, and transversely from the side of the *sternum* to the anterior fold of the armpit. They increase in fulness during pregnancy, especially after delivery, and become atrophied gradually after the menopause. The left mamma is generally a little larger than the right.

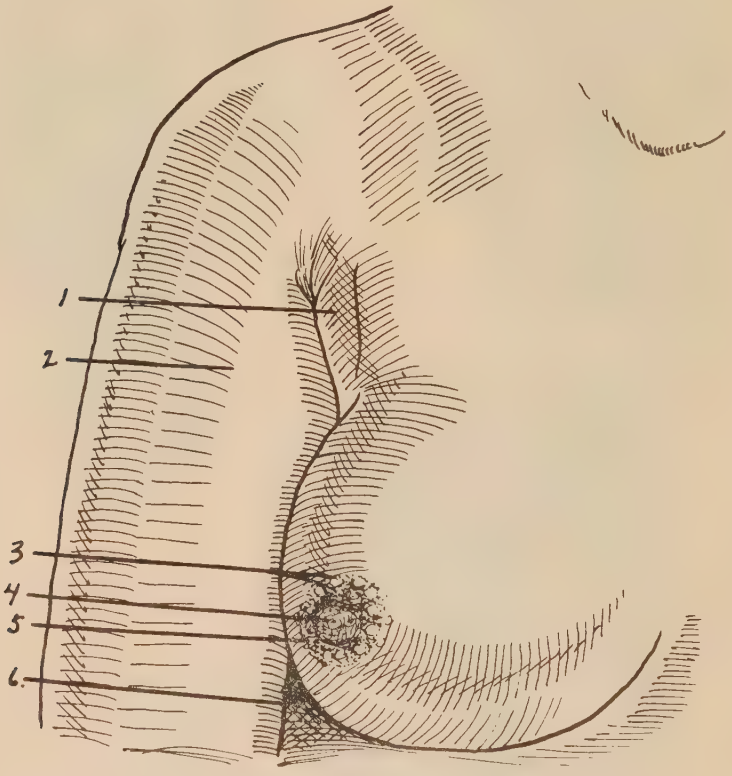

Fig. 32—Mamma of Virgin aged eighteen years (from Toldt).
1. Axilla. 2. Upper Arm. 3. Sebaceous Glands of Areola.
4. Nipple. 5. Areola.

Just below the centre of the convex surface of the Mamma is a small dark colored conical prominence called the nipple. It is surrounded by a delicate rose-colored areola before impregnation, which tinge becomes darker colored during the progress of pregnancy.

The *Mammae* are compound racemose glands composed of numerous lobes, which in turn are composed of lobules insheathed by the pectoral fascia. The mammae are well furnished with blood vessels and milk-ducts, as the office of the organ is to furnish milk to the new-born babe.

Accessory breasts and supernumerary nipples are very rare.

In young non-pregnant women the breasts are firm and plump. The nipples undergo a sort of erection from mechanical excitement.

In old women and in multiparae the breasts are pendulous.

The growth of the breasts in pregnancy and their secretion of milk is believed to be due to a hormone developed in the foetus and thence carried into the maternal blood.

The condition of the breasts has medico-legal importance in Canon Law.

The physical signs of virginity as usually cited in marriage law are: firm prominent breasts; prominent nipples; delicate rose-colored areolae; the surface of the belly is smooth and free from *striae;* the linea alba is not darkened; the labia majora adhere and hide the labia minora; *the hymen is unbroken;* the frenulum is intact.

Of these signs, some relate to the integrity of the virginal state: others relate to non-pregnancy. An examination of the breasts will usually reveal whether the milk of pregnancy is being secreted. This sign is not observable in the very first stage of pregnancy.

Congenital Malformations and malpositions of the generative organs are more frequent in women than in men. This relative proportion enfeebles not the general truth that all such malformations are rare: nature is generally right.

Congenital absence of one ovary or extreme atrophy thereof has sometimes been observed. Rudimentary undeveloped ovaries usually accompany infantilism of the uterus. Also accessory ovaries have been observed. Complete absence of both ovaries is so rare that it is denied by some authorities. Graves declares that it occurs only in non-viable fetuses in which there is complete absence of genital elements.

The term fetalism was introduced by Alfred Hegar to denote a faulty or arrested development that takes place in embryonic life. It may give rise to *uterus didelphys,* and by failure of the union of the Muellerian ducts, it may cause absence of the vagina, uterus, tubes, or ovaries.

Infantilism is a corresponding defect in normal development so that the child born with a full equipment of the generative organs never matures: the organs retain the characteristics of the prepubescent period.

Infantilism may render the consummation of marriage impossible.

Hypoplasia, or defective or incomplete formation of the female reproductive organs is oftener observed than total lack of vagina. In infantilism the vagina may be abnormally narrow, with thin inelastic walls. The labia majora and minora may be rudimentary, and the vulvar opening small. The breasts may not develop.

Some theologians have imagined a condition where the rectum was supposed to communicate with the vagina. They have even contemplated a case where coitus might reach the vagina through the anus. "This is incorrect as a connection between the rectum and Mueller's duct is embryologically impossible." (Graves)

In the early human embryo the urinary, genital, and intestinal canals all empty by one external opening called the *cloaca.* Beginning in embryos of 5 mm. a partition begins to develop between the rectum and urogenital sinus. This partition is well established in embryos of 11 to 15 mm. There is thus established dorsally the rectum; and ventrally the urogenital sinus. There is as yet no differentiation between male and female embryos: the delta of the cloaca has as yet only two mouths. At this point if nature

fails to establish a partition the condition called persistent cloaca may result. This gives rise to anus vestibularius. We believe with Graves against some minor authorities that the anus never opens into the vagina, but may open into the vulva just behind the vaginal outlet.

The development of the uterus and vagina from the Muellerian ducts is present in embryos of 20 to 30 mm.

The septum dividing the female urethra from the vagina may be deficient and permit the urinary canal to open into the vagina.

Atresia of the rectum may take the form in which the bowel has no exit. This prevents defecation, and must be operated on immediately after birth.

In the second form of anal atresia, called *vestibular anus,* the anal opening is not in its proper place in the anal dimple but in the urogenital sinus just back of the *orificium vaginae.*

Children with this defect have grown to maturity, and have borne children. If the opening be very small it would obstruct defecation. If the opening be of usual size, the condition may escape the observation of an ignorant mother or nurse. The necessary surgery is not difficult.

Complete absence of the vagina has been recorded, but the cases are rare. Hypoplasia or atresia are oftener observed. In most cases of complete absence of the vagina, the uterus is also absent or functionless. There is therefore no proper puberty; no menstrual secretions.

The author found such a case where marriage had endured for ten years. The marriage had never been consummated: the case was judged by competent medical authority inoperable. Both conjuges refused to dissolve their union. It caused an abuse of nature even to *coitus in ano;* but they clung to each other. The external genitals were declared by the surgeons to be somewhat undeveloped, but the sexual instinct of the woman was normal. In such cases if any degree of penetration is possible, the marriage should not be interfered with, if the conjuges are in good faith.

In fact, even in extreme cases of total absence of the vagina it is often advisable to let them remain in good faith, if their social relations are harmonious. This is especially advisable where the rudimentary vagina is merely a blind pouch.

Surgery claims to be able in certain cases to form an artificial vagina. Therefore recourse to surgery should be advised when possible. Surely many of the cases will be inoperable.

Atresia of the vagina may be total or partial. Total atresia obliterates the entire canal. Relative atresia is the closing of some part of the canal between the cervix and the hymen.

Rare cases of atresia are congenital. In the majority of cases the imperforation is the result of an inflammation or ulceration of the vaginal walls. The closure is sometimes an abnormal union of the epithelial surfaces of the hymen before birth. In such cases the tumor is extruded from the labia, forced out by bloody secretions retained behind the occluded hymen.

In most cases some mucus and blood flow from the fetal uterus at birth. The uterus is thenceforth inactive until puberty. These uterine

secretions force out the occluded hymen in a balloon-shaped hematocolpos. This condition yields to surgery.

It may be observed here that atresia which is simply the closure of an opening which is radically in place is generally operable.

Stenosis or narrowing of the vagina is often cicatricial: the scars may result from instrumentation at delivery of a child or from vaginitis. Surgery attempts to excise the scar-tissue. Plastic surgery in most cases may restore the vagina to its normal caliber and consistency.

In Scientific Annals there are recorded very rare cases of the complete absence of the *Nymphae, Clitoris,* and *Vagina.* The surface was a smooth, hairless, imperforate continuation of the belly. The urine was voided through the *Umbilicus* or *Rectum.*

The celebrated Dr. Fodéré in the preceding century found a girl of 25 years, who had been six years married. The marriage was not consummated. A physical examination by the midwife revealed an absence of all the organs of generation. The plain convex surface was pierced by a small orifice. The surgeon Déjaux made a deep incision of exploration in a vain attempt to find the vagina. Drs. Levret, Petit and Morand bore witness of the complete absence of the generative organs.

The marriage was annulled.

The woman died at Lyon in 1752. The autopsy revealed an atrophied, undeveloped, hard mass in lieu of womb and vagina. The orifice was a cul-de-sac.

In the latter part of the 19th century Dr. Caro reported the case of an Italian woman of 29 years of age. She had been married nine years, was sterile, and had never menstruated. A physical examination revealed a vagina of about two inches and a half. In lieu of the womb there was a small nodosity no larger than a kernel of wheat. There were no ovaries, no labia, no clitoris: a few hairs appeared on the mons Veneris. The virginal mammae were well developed. The woman had never felt sexual desire. Wretched is the lot of these poor sufferers. They are rare.

Vaginismus is an involuntary spasm of the *sphincter cunni,* or compressor vaginae, sometimes called the bulbocavernosus muscle of the female. Other muscles of the pelvic floor participate in this spasm.

"In several cases of vaginismus occurring in young married women which have come under my notice, it was observed that the attempts at intercourse gave rise to violent involuntary spasmodic contractions of the constrictor cunni and the other muscles of the urogenital and anal regions, and in addition it was found that these attempts were followed by tachycardial paroxysms with dyspnoeic manifestations, lasting for a considerable period, it might be as long as one or two hours." (Kisch, The Sexual Life of Woman.)

Pseudovaginismus is produced by a variety of affections which make introition painful, most important of which are urethral caruncle, inflammation of Skene's glands, hard resisting hymen, fissure of the vaginal mucous membrane, inflammation of Bartholin's glands, soft chancre and other ulcerations of the labia, shrinking of the vaginal opening from senile atrophy or from castration, and cicatricial bands following improperly performed operations on the perineum.

In all these cases contact of the male organ or of the examining finger is extremely painful, so that the patient naturally shrinks away to avoid pain. The spasmodic movement may, therefore, be regarded as physiologic, in the sense that it implies no abnormal psychic process.

In *true vaginismus*, on the other hand, there is present usually no real hyperesthesia of the parts, the muscular spasm being the result of a mental reflex. It is often exhibited before actual contact with the vulva takes place. The cause of the reflex rests in the imagination and consists of the fear of being hurt. In many cases the trouble dates back to some early painful attempt at coitus, or to a rough digital examination, the remembrance of which produces a lasting fear of contact. Other causes are the fear of becoming pregnant, personal dislike of the man, or an inborn abhorrence of the sexual act, such as it not infrequently seen in the women of the hypoplastic or old-maid type. In the examining room it is not infrequently found to be the result of shame and the fear of detection.

Abnormal practices, like masturbation and coitus interruptus, frequently lead first to frigidity and then to true vaginismus.

True and false vaginismus are, of course, closely related, and it may sometimes be difficult to say which name is applicable to a given case, as, for example, in a masturbator with secondary vulvitis. This is especially true of women of middle age, who acquire vaginismus after an ill-judged operation on the perineum or following hysterectomy and castration. Here the process is due to an atrophy and shrinking of the tissue at the introitus which is constantly uncomfortable, yet is not actually tender to the touch. Severe and intractable vaginismus may, however, be present. In these cases the psychic reflex is maintained by the constant subjective discomfort of the perineum. If the discomfort of the perineum can be eliminated the vaginismus disappears.

The *treatment* of pseudovaginismus is directed toward the particular lesion which causes pain, and the cure of the vaginismus is, as a rule, directly dependent on the cure of the offending lesion. Sometimes, however, the patient acquires a habit neurosis and the fear of coitus persists, the case becoming then one of true vaginismus.

The treatment of true vaginismus is a matter of great difficulty and may require the help of an expert psychotherapeutist. It must first be determined by digital examination and inspection whether there is any objective cause for the affection. Examination of these patients is a supreme test of skill, patience, and tact on the part of the physician. If the patient makes the examination impossible, it is necessary to resort to an anesthetic. If the examination without ether is roughly or impatiently done, the vaginismus may be made very much worse. On the other hand, if the confidence of the patient is gained, and a successful examination is carried out, so that the patient is convinced that there is no real tenderness of the parts, it may result in a complete cure.

Dyspareunia in its strict sense denotes in the woman painful or disagreeable coitus and absence of orgasm. It is often used in a loose sense to signify all forms of impossible, difficult, or unpleasant coitus. Narrowness, absolute or relative, of the vagina, insensibility of the clitoris, deficient excitability of the genitocerebral ganglion or of the genitospinal ganglion

and vaginismus may cause dyspareunia. It may also be psychic. Some women reach normal development and bear children without ever experiencing an orgasm. In this type the birth rate is low. In woman the psychic element plays a large role. Many women only acquire a normal sensibility of the clitoris after weeks of congenial married life. If love be absent the woman may remain ever cold. In some women retarded sexual development may be aroused to development by a tender sympathetic love. In many cases perfect coitus is not accomplished in the first conjugal embraces. Therefore the false fear and unhappiness that arise from these imperfect attempts should be dispelled. The advice of a competent surgeon should be sought in all real difficulties.

The cause in most cases is psychic and will right itself as the woman adjusts herself to her new life; but even in these cases the authority of the surgeon gives confidence and sooner removes the psychic defect.

Female masturbation often leads to insensibility of the clitoris in coitus. The abused organ may only respond to unnatural excitement. Such cases are rare.

"Dyspareunia must be clearly distinguished from two somewhat similar conditions, with which at first sight it is liable to be confused, namely, from anaesthesia sexualis, and from vaginismus. By sexual anaesthesia we understand, as previously explained, the absence of the sexual impulse, a symptom which, when the reproductive organs are normal in structure and function, is either of central nervous origin, a result of disease of the brain or spinal cord, or else is due to general nutritive disorders such as diabetes, morphinism, or alcoholism. A woman affected with dyspareunia does, however, experience the sexual impulse, it may be very actively, but sexual intercourse brings about no gratification of her desires. In vaginismus, on the other hand, the introduction of a foreign body, that is to say of the membrum virile, into the vagina, gives rise to painful reflex cramps of the sphincter vaginae, or of the muscles of the pelvic floor, whereby the completion of coitus is rendered impossible: whereas in dyspareunia coitus can be effected, but gives rise to no voluptuous sensations.

"The pleasure which normally occurs in woman during sexual intercourse is brought about in this way, that contact with and friction by the penis stimulates the sensory nerves of the clitoris, the vulva, the vestibule, and the vagina: this stimulus is propagated to the cerebral cortex, where it gives rise to voluptuous sensations, and then, by reflex stimulation of the genito-spinal centre, gives rise to a series of reflex discharges. The pudic nerve, a branch of the sacral plexus, supplies the female external genital organs. Some of its branches pass in the clitoris to a peculiar form of nervous end-organ discovered by W. Krause, Krause's genital corpuscles: the structure of these corpuscles appears to fit them exceptionally well for the transmission of stimulatory waves to the nerve centres. 'When this stimulus,' says Hensen, in his work on the physiology of reproduction, 'in addition to other effects, also gives rise to a voluptuous sensation, the cause must be sought in central nervous connections and apparatus. Similar relations are to be found in connection with the mechanism of nutrition, for example, in the association of hunger, appetite, agreeable sensations of taste, the act of mastication, and the secretions of saliva.'

"By means of this stimulus, several reflex processes are originated in the reproductive canal, the most notable of which are the erection of the clitoris, and the ejaculation of the secretions of various glands. The cavernous tissue of the clitoris is connected with that of the bulbus vestibuli, and the dorsal nerve of the clitoris is one of the principal nerves of voluptuous sensation. The venous plexus constituting the bulb of the vestibule lies at either side along the margin of the vestibule at the boundary between the labium majus and the labium minus, and laterally it is covered by the constrictor cunni muscle. During coitus the blood is driven out of this bulb into the glans clitoridis, and thus the sensibility and the erection of the glans are increased. The constrictor cunni and ischiocavernous muscles draw the clitoris, which is bent at a right angle downward, into contact with the penis. By means of the pressure of the constrictor cunni, the mucous secretion of Bartholin's glands, which open into the vulva at the back of the labia majora, is expressed.

"As additional reflex actions, dependent upon the activity of the reflex centre in the lumbar enlargement of the spinal cord, there ensue contractions of the vagina, peristaltic movement of the tubes, some descent of the uterus, relaxation of the os uteri and rounding of this orifice, and induration of the portio vaginalis, whereby the tubal and uterine mucus and the secretion of the cervical glands are expressed. This process of *ejaculation* constitutes the culminating point of the voluptuous sensation occurring in the sexual act; this act thus exhibits two phases—the sensation of friction, and the sensation of ejaculation." (Kisch, op. cit.)

Sexual desire is greatest in woman at the period when she is most liable to conceive. It is at its zenith immediately after menstruation, and then rapidly declines.

It is subject to psychic inhibitory influences such as dislike of the man, fear of pregnancy, shame, etc.

"Gutceit records interesting experiences, which are readily intelligible in view of what we have already quoted. He finds that of ten women after defloration, two only immediately experience full sexual pleasure. Of the eight others, four only have an agreeable sensation produced by the friction during coitus: but the sensation of ejaculation does not make its appearance until the lapse of at least six months, or it may be even several years, after marriage. In the remaining four women, pleasure during sexual intercourse may never become properly established. The women of the first class are described by the author as being of a very ardent temperament, and passionately attached to their husbands. In such women, the sensation of ejaculation occurs during intercourse with any man toward whom they are sympathetic. Women of the second class are of a less ardent temperament, and are often comparatively indifferent toward the man with whom they cohabit. Women of the third class have little or no amatory feeling, and they either hate the man with whom they are cohabiting, or at least feel physical repulsion to the idea of intercourse with him. Gutceit considers that meretrices usually belong to the third category. In the practice of their trade, they make a counterfeit of voluptuous enjoyment, and only experience real sexual gratification in intercourse with the man of their choice.

"It is of great practical interest, alike from the gynecological and from the neuropathological standpoint, to determine the consequences in women of ungratifying sexual intercourse. In the present state of our experience it must be assumed that the effect of abnormal sexual intercourse, that is of intercourse which does not culminate in gratification produced by the sensation of ejaculation, is deleterious. This is explained by the fact that, owing to the absence of the muscular contraction of the genital passage, the latter remains engorged with blood; the resultant hyperaemia passes away very slowly, and, when frequently repeated, gives rise to chronic tissue changes, manifesting themselves as diseases of the reproductive organs. Injury to the nervous system ensues, partly in consequence of psychical non-gratification in the widest sense of the term. The nervous disorders thus produced are typical forms of (sexual) neurasthenia; and in cases in which the pathogenesis is predominantly psychical (antipathy to the husband, etc.) hysterical types of disorders are especially frequent. Von Krafft-Ebing believes that incomplete coitus, that is, coitus not culminating in the sensation of ejaculation, is a frequent cause of hysterical disorders in women.

"Dyspareunia, the absence of voluptuous sensation in women during coitus, may be referred to three fundamental causes:

"1. Insufficient or completely wanting peripheral stimulation of the sensory nerve terminals in the female reproductive canal: in these cases the conducting tracts to the nerve centres never become active.

"2. Diminution or cessation of the excitability of the reflex centre in the lumbar enlargement of the spinal cord: this leads to failure of the sensation of ejaculation.

"3. Inhibitory influences proceeding from the cerebral cortex, whereby voluptuous sensations and perceptions are checked.

"The first-named of these etiological influences is in my experience the commonest. Incomplete or quite inadequate stimulation of the sensory nerves of the genital canal may be due to the maladroit performance of copulation on the part of the male, owing to inexperience, or it may depend on gross disproportion in size between the reproductive organs of the man and the woman; in other cases it may be due to disease of the reproductive organs in either sex, influencing unfavorably the sensibility to stimulation of the nerves of the genital canal. Awkward or incomplete performance of coitus may thus lead to failure of voluptuous sensation, and this may ultimately pass into permanent dyspareunia. Temporary dyspareunia is very common in young wives during the first months of married life, ensuing on the pains of defloration; and very gradually gives place to normal voluptuous sensation. It may be one or two years after marriage before the sensation of ejaculation is first experienced. Not infrequently, dyspareunia depends on incomplete potency in the husband, who is incompetent to arouse voluptuous sensation in his wife. For this reason, dyspareunia is common in young women married to elderly men; but is common also, where (as is so frequent among Russo-Polish Jews) the men also marry very young, at an age from sixteen to seventeen years, and where, moreover, the husband has often before marriage impaired his potency by masturbation; finally dyspareunia is common when girls still undeveloped sexually are married to powerfully built men.

"Regarding the pathological conditions of the female reproductive organs which counteract the peripheral sensory excitants of voluptuous sensation, we exclude from further consideration the obvious causes, absence and atrophy of the reproductive organs, and senile marasmus. Of prime importance as a cause of the failure of sexual sensibility in the early period of married life must be mentioned inflammation of the fossa navicularis, due to awkward attempts at intercourse. Other causes of deficient sensibility are: complete or partial persistence of the hymen, lesions of the vaginal inlet, acute or chronic vulvitis in consequence of irritating abundant secretion, especially as a sequel of gonorrhoeal vaginitis. The last named infective disorder is especially harmful, because Bartholin's glands are involved in the associated vulvitis. Even after the cure of the vulvitis, permanent dyspareunia may remain. Perineal fissures may result in the stimulant effect of coitus being insufficient, owing to the slight friction possible at the inlet in these cases. Not less serious sometimes are small, hardly discernible fissures in the vagina. Additional causes of deficient sexual sensibility are recto-vaginal, and vesico-vaginal fistulae.

"The second cause of dyspareunia, diminution or complete lack of irritability of the reflex centre of the lumbar enlargement of the spinal cord, appears to be less frequently operative. We must, however, assume that certain nervous disorders, such as hysteria and pathological changes in the spinal cord, are responsible in this connection. The activity of the lumbar sexual centre appears in women to be normally subject to variation within certain limits; and seems usually to attain its maximum irritability during menstruation. But normally these variations are never so great as to produce in women complete though merely temporary dyspareunia; in this respect offering a marked contrast to what occurs in other animals at other times than the rutting season, and of which every bitch not in heat furnishes an example when she refuses the sexual advances of the dog.

"As regards the third causal influence in the production of dyspareunia, the influence of the brain, this, though important, is less frequently in operation. Diseases of the brain, degenerative processes, may constitute a cerebral cause for the failure of sexual sensation. But more frequently, certain cortical perceptions, such as dislike or hatred of the cohabiting male, an ardent passion for some other lover, grief and trouble, exercise inhibitory influences, which render the occurrence of voluptuous pleasure during the sexual act difficult or quite impossible.

"A condition like dyspareunia, our knowledge of which depends entirely upon the subjective sensations of the woman concerned, is naturally one regarding whose existence accurate information is difficult to obtain. Very rarely does it happen that women spontaneously approach the physician with complaints of this condition; indeed, in my experience, they do so only when they are sterile, and when they assume, in accordance with the widespread popular belief, that their sterility is connected with the absence of voluptuous sensation during sexual intercourse. More commonly, however, it is the husband who feels it his duty to confide to the medical man the remarkable apathy of his wife in sexual intercourse. But when once the medical man's attention has been directed to this question, and when he institutes inquiries among his patients in a scientific passion-

less manner, one making due allowance for a woman's modesty, as the moral importance of the subject demands, will be astonished at the frequency of dyspareunia, and he will find herein the explanation of many obscure phenomena in the life of woman. On the other hand, it must never be forgotten that a certain number of women complain of dyspareunia without any justification whatever, in order to arouse interest and sympathy, by representing themselves as unwilling sacrifices on the marital altar.

"Dyspareunia is a condition which affects a woman's whole nature, powerfully influences her mental life, and thus gives rise to greater psychical than physical damage. The consciousness of being deprived of the greatest joy of physical love produces great emotional depression, even in a woman by no means sensually inclined, and gives rise to a hypochondriacal state, at times even to melancholia. In other cases, the idea, not infrequently suggested by more happily situated women friends, that the woman herself is not to blame for this condition, has a demoralizing effect upon her, and destroys the happiness of married life. (It has been confessed to me, in isolated cases, that the dyspareunia was relative only.) Apart from this, the absence of sexual gratification gives rise to a series of nervous troubles, presenting either the variable characters of hysteria, or else the symptoms of neurasthenia. Finally, the frequently repeated incomplete coitus, incomplete inasmuch as the woman does not experience the sensation of ejaculation, induces a chronic hyperaemia in the female reproductive organs, passing on into blood stasis, and ultimately into chronic inflammatory tissue changes; in this way arise metritis, perimetritis, and parametritis, salpingitis, oöphoritis, disorders of menstruation, menorrhagia, and atypical uterine haemorrhages. The possibility cannot be disproved, that in this way new-growths of the reproductive organs may also originate. The act of sexual intercourse, which at first may be to the woman a matter of comparative indifference, and in which she plays her part merely from a sense of duty, becomes, in cases of long-standing dyspareunia, something to which she feels a positive dislike, and is recognized by her as the actual cause of the troubles that ensue upon intercourse, such as sacrache, sensations of weight and pressure in the pelvis, strangury, fluor albus, a feeling of exhaustion, etc.

"At times, perverse sexual sensation is associated with dyspareunia. Women who find no enjoyment in normal sexual intercourse with a male, sometimes masturbate, sometimes indulge in amor lesbicus, etc.

"Of great importance appears to me the relation between dyspareunia and sterility in women. As already pointed out, dyspareunia comes chiefly under medical observation in cases in which it is associated with sterility. The husband, seeking advice concerning his wife's failure to conceive, complains of her frigidity in sexual intercourse as the probable cause; or the wife comes to seek advice, saying that she never experiences sexual gratification, and that for this reason she has failed to become pregnant. As a matter of actual fact, dyspareunia and sterility are associated with such remarkable frequency, that my own experience leads me to believe in the existence of an etiological connection between the two conditions, at least in a certain proportion of the cases. Among 69 sterile women whom I questioned regarding dyspareunia, the latter condition was

present in 26, that is to say, in 38 per cent. of the cases. Matthews Duncan reported that of 191 sterile women, 62 did not experience sexual enjoyment. Sexual excitement of the woman during copulation would certainly appear to have a definite bearing upon the occurrence of conception, for we know that by the voluptuous sensation reflex actions are aroused in the genital canal, favoring the retention of semen and its passage through the os to the interior of the uterus, and perhaps also giving rise to reflex changes in the cervical secretion which favor the passage of the spermatozoa into the uterine cavity.

"In cases of relative dyspareunia, the influence of this condition in producing sterility is also manifested, the unfaithful wife being impregnated by her lover though she has remained sterile in intercourse with the husband, to whom she is indifferent. To dyspareunia of this nature (dependent upon sexual disharmony), we may also refer the sterility of a married pair who have for some time lived together in unfruitful intercourse, whereas, after divorce and the contraction of fresh unions, both the man and the woman prove normally fertile. Such cases have been personally known to me; and similar instances aroused the attention of the natural philosophers of antiquity, for instance, that of Aristotle. The importance of voluptuous sensation in promoting conception is also manifest from the fact that in the majority of women, after the pains of defloration, dyspareunia usually persists for a season during the early period of married life; and, corresponding with this, the first conception is usually deferred for some little time after marriage, to a period corresponding with the awakening of the sensation of ejaculation." (Kisch, op. cit.)

The first attempt at coitus is usually an awkward imperfect act. If the man is harsh and violent he may generate in the mind of the woman a horror of the act and a dislike of the man. Gentleness therefore and protecting love are prime requisites. The labia should be anointed with vaseline, if their dry surfaces impede intromission of the penis. An imperforate tough hymen, adhesion of the labia, and an excessively tough hymen should be surgically operated.

Psychic impotency is a *causa annullandi matrimonium*. In 1902, at the request of the Rota, the Pope annulled such an unconsummated marriage.

Vaginitis is treated here since it often gives rise to atresia of the vagina.

Vaginitis is an inflammatory process in the vaginal wall. It may be acute or chronic; diffuse or localized.

Diffuse vaginitis occurs more frequently in young children. The whole vaginal membrane becomes red and swollen, and is profusely bathed in blood and inflammatory secretion. The localized vaginitis is confined to certain areas of the vagina. The vaginitis may destroy the surface epithelium of the vagina: the apposed vaginal surfaces may form an adhesion giving rise to atresia.

All forms of vaginitis are attended by a leukorrheal discharge, varying in amount and character.

The causes of vaginitis are gonorrhea, senile atrophy, syphilis, endocervical catarrh, endometritis, masturbation, excessive coitus, tampons or pessaries.

The treatment should be to remove the cause of the irritation and then allay the local inflammation by proper douches under the direction of a physician.

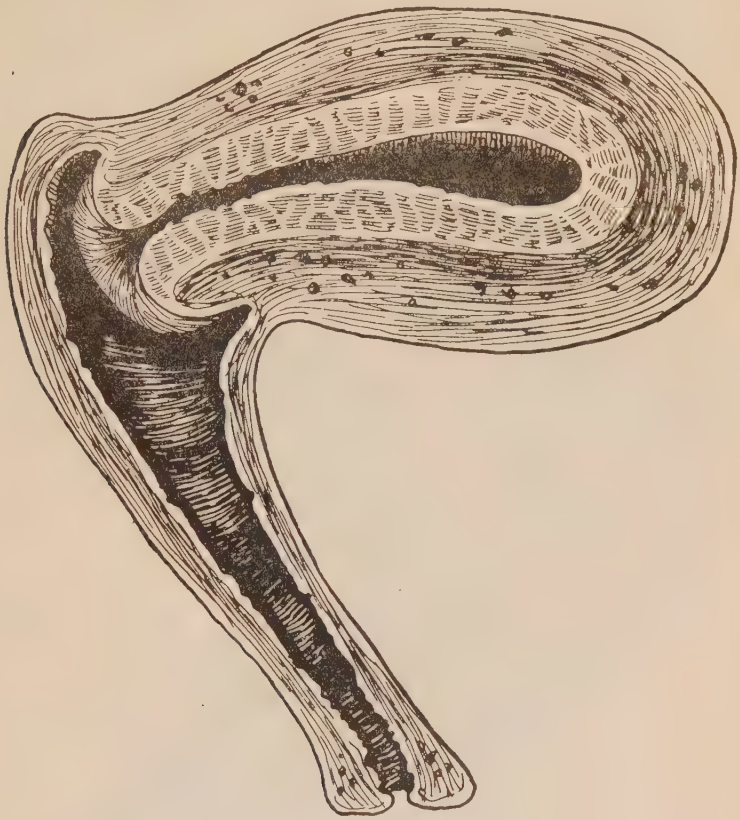

Fig. 33—Normal position of Uterus (after Graves).

"*Retroversion* of the uterus means a turning back of the entire organ on an axis situated approximately at the internal os. In an uncomplicated retroversion the cervix and body retain their normal relationship to each other, so that as the body turns backward the cervix points forward. For the sake of convenience, retroversion is divided into three degrees: the *first* degree includes deviation from the normal position to a point where the long axis of the uterus coincides with the long axis of the vagina. At this point the uterus is said to be in the *second* degree of retroversion, and the cervix points in the direction of the vaginal orifice. Deviations beyond the second degree are said to be in the *third* degree, and the cervix tends to point correspondingly further forward.

"*Anteversion* means a turning forward of the uterus. As a matter of fact, the uterus in its normal position is turned forward as far as it can go, resting as it does on the bladder. The term 'anteversion', therefore, describes the normal position of the uterus, and does not denote a displacement, as it was formerly supposed. The term is rarely used at present.

"*Lateral version* means a turning of the uterus to the right or left.

"*Retroflexion* of the uterus means a bending backward of the body on the cervix, causing an angulation of the posterior wall. The flexion takes place at the internal os. It is usually a more advanced manifestation of retroversion, and does not occur until the uterus has reached the third

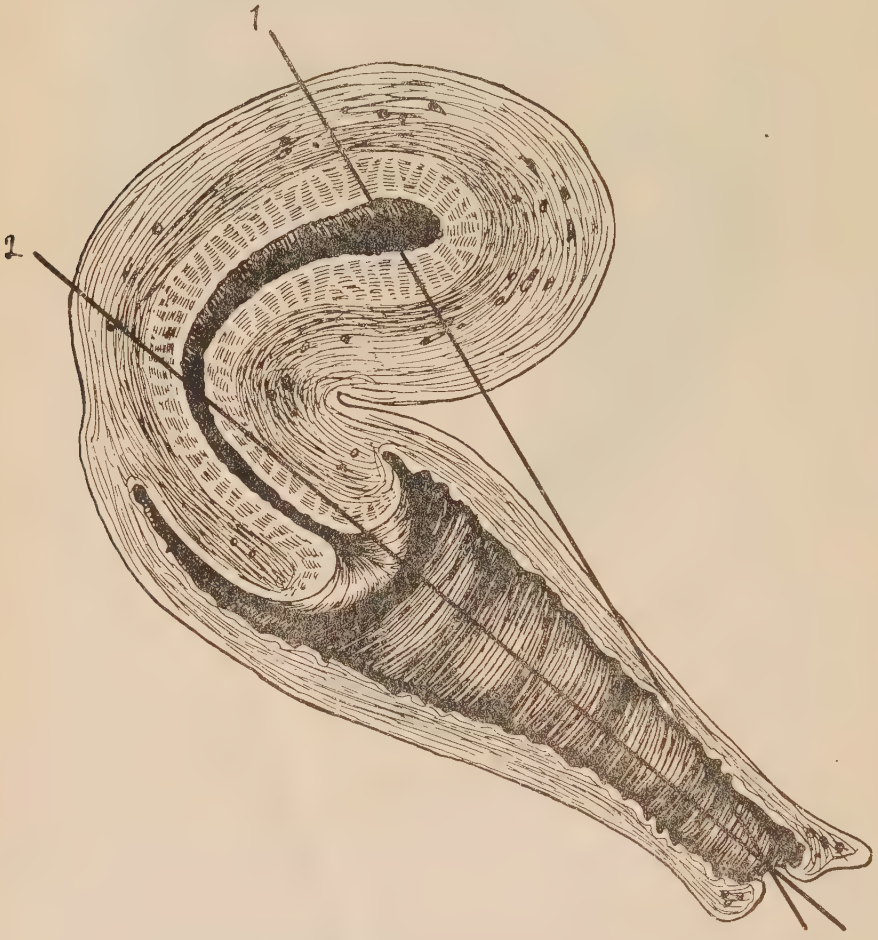

Fig. 34—Anteflexion with Retrocession (after Graves). The whole uterus sags back toward sacrum.

1. Normal Axis. 2. Axis of Retrocession.

degree of retroversion. When retroversion and retroflexion are combined it is customary to say that the uterus is in a position of *retroversion-flexion.*

"*Lateral flexion* means a bending of the uterine body on the cervix to the right or left. If there has been also a version involving the cervix, one speaks of *right* or *left version-flexion.*

"*Ante-flexion* relates to foward angulation between the body and cervix. The uterus is normally anteflexed to a certain degree. The term

'anteflexion' is used to denote an abnormal amount of angulation. The condition is described more exactly by *hyperanteflexion,* a word that is not in common use.

Fig. 35—Retroversion 2nd degree (after Graves).

"*Retrocession* is a specialized term that relates to a condition in which the uterus has receded to a position nearer the sacrum than normal, but in which the fundus continues to point forward. In the majority of the anteflexion cases the whole uterus is abnormally far back, and is said, therefore, to be retrocessed. Conversely, retrocession, when properly used, implies an anteflexion of the body.

"*Anteposition* denotes that the uterus, as a whole, is in a position abnormally near the pubes or anterior abdominal wall. This position is created by the pressure from behind of a tumor situated in the posterior culdesac, or by abnormal attachment of the fundus to the anterior abdominal wall.

Fig. 36—Retroversion 3rd degree with Retroflexion (after Graves).

"*Retroposition* and *retrolocation* are terms vaguely used, and may include retroversion, retroflexion, and retrocession.

"*Prolapse* of the uterus denotes a permanent descent of the uterus from the physiologic level in the direction of the vaginal introitus. The word *descensus* describes the condition more accurately, but is not as commonly used. The term 'prolapse' relates to all degrees of descent until the cervix reaches the vaginal introitus.

"*Procidentia* denotes extreme prolapse, and includes all conditions in which the cervix extrudes from the vaginal introitus.

"*Complete* procidentia is used to designate the extrusion of the entire organ from the vaginal orifice.

"The word 'prolapse' is sometimes applied to the vaginal wall. When used in this sense, prolapse of the anterior vaginal wall corresponds to a cystocele, while prolapse of the posterior wall is identical with a rectocele.

"*Torsion* of the uterus means a twisting of the body on the cervix in the vertical axis.

"*Elongation* of the uterus means a lengthening of the organ by pressure, tension, or hypertrophy. The elongation may occur in the body, in the cervix, or in both.

"*Inversion* of the uterus means a turning inside out of the entire organ."

"By far the greatest number of retroversions follow child-bearing. The tissues of the uterus and of all its supporting structures are enormously hypertrophied and stretched during pregnancy. These tissues by normal involution return nearly but not quite to their original form and tonicity. Permanent laxness of these tissues results from an incomplete involution of the parts after the puerperium. This may be brought about by various factors. The important cause is a congenital insufficiency inherent in the tissues themselves. Individuals differ greatly in respect to the tone, elasticity, and recuperative power of their supporting tissues, as is shown by the fact that some women who have borne many children often show astonishingly little damage to their pelvic supports, while in others only one childbirth may result in the most extreme displacements. In the latter case the patients often present other evidence of deficient tissue-supporting strength, such as enteroptosis, diastasis of the abdominal recti, etc. Rapid and frequent pregnancies may result in permanent laxity of the pelvic support even in the naturally endowed with good tissues. The early getting up from child-bed is an occasional factor in the causation of retroversion, but its frequency is probably exaggerated.

"The social condition of the patient undoubtedly plays an important part. It has been our experience to find displacements following child-bearing far more frequent among the working class than among the well-to-do. This is only partly explained by the better physical inheritance that the well-to-do in general possess. Other causes are more important. Poor women work hard and continuously during the period of pregnancy, most of them without efficient abdominal support. The strain of constant severe abdominal pressure necessitated by physical work, and unrelieved by proper rest or support, must produce a greater stretching of the pelvic tissues, and therefore results in a more incomplete involution than is the case in the more fortunate woman who can regulate her life to her condition.

"Heavy work soon after the puerperium, entailing as it does forcible abdominal pressure, is also a factor. It is possible that lack of nourishment

and intercurrent disease may have a deleterious effect on the supporting tissues during pregnancy and the puerperium, though it is probable that they do not in the non-pregnant state. Long lactation periods, such as poor women are prone to subject themselves to, may weaken the pelvic structures by means of the local atrophy which overlactation produces in the genital system.

"Besides the damage that may be done to the uterine supports, we must consider also the influence which pregnancy exerts on the musculature of the uterus. It has been shown (Theilhaber) that when the uterus develops into maturity the proportion of muscular tissue to connective tissue in the uterine wall becomes as 3 to 2 instead of 2 to 3. It has also been shown that each pregnancy diminishes the relative amount of muscular fiber. At the menopause the uterus becomes atrophied, chiefly at the expense of the musculature, so that the connective-tissue element again predominates.

"Repeated pregnancies may by their influence on the musculature cause the uterus to lose its proper tone so that it becomes flaccid. This flaccidity is most apparent at the level of the internal os, so that the body may turn on the cervix as if on a hinge. Such a uterus tends to sag backward away from the bladder in certain positions of the individual, so that the intestines have an opportunity to fall into the uterovesical space, and, by exerting pressure on the anterior wall, gradually to cause a retroflexion.

"After the menopause the uterus is always in the second degree of retroversion if the physiologic process of atrophy takes place normally. This is due to the change in the musculature of the uterine wall. The uterus loses its form of angulation and the body becomes smaller, lighter, and more flaccid. It sags away from the bladder and the intestines enter the uterovesical space. The body of the uterus, however, being small and light, and the uterine supports being somewhat shrunken, complete retroversion does not take place. The uterus remains straight, with its long axis pointing in the direction of the vagina and lying among the intestines, which act as a cushion both in front and behind. It is important to remember, therefore, that retroversion of the senile uterus is physiologic and not pathologic.

"Some women with even marked degrees of retroversion exhibit no symptoms whatever. This fact has led some to infer that the backward displacement of the uterus is physiologic (Cabot). Such observations are erroneous, for there can be no doubt that the great majority of women with retroversion suffer in some way from the condition. The two most common symptoms directly caused by retroversion are backache and the sense of pelvic pressure.

"In the analysis of a series of 500 cases of retroversion from all causes the writer found that sacral backache was a definite symptom in 76 per cent. The cause of backache as a result of backward rotation of the uterus has not been satisfactorily explained, and for that reason its existence as a definite symptom of retroversion has been denied (Cabot).

"The confusion that has arisen in this subject is partly due to the supposition that retrodisplacements may cause backaches at any level of the spine. It should be remembered that backache from retroversion occurs only in the sacral or very low lumbar region and is always central. Of the fact that retroversion of the uterus does cause backache in this location there is no doubt whatever.

"The nature of the pain is not entirely characteristic. It is often worse on exertion or standing. Sometimes it is worse at night. It is often difficult to differentiate it from sacro-iliac or muscular strain.

"The sense of pelvic pressure may be combined with a sacral backache or it may exist as a symptom by itself. This symptom is the result partly of the increased weight of the uterus, but is chiefly due to its condition of prolapse. It may appear as a definite bearing-down feeling which is increased or brought on by standing, or it may manifest itself as an early state of tire on exertion.

"The physical exhaustion resulting from retroversion and prolapse has a very important influence on the general health of the patient, and especially on the nervous system. It is the commonest occurrence to see active, athletic, good-tempered women after several childbirths bcome nervous, irritable, unreasonable, discontented, easily exhausted, and apparently completely changed, both nervously and physically, as a result of the constant pelvic discomfort and weakness from retroversion and prolapse. There may be numerous secondary symptoms that develop from the general nervous disturbance, such as headaches, muscle pains, indigestion, constipation, etc., which are to be regarded as indirectly caused by retroversion of the uterus.

"Patients with retrodisplacement frequently complain of pain in one or both sides. When pelvic inflammation is not present these pains are commonly assigned to the ovaries. Some even speak of an ovarian neuralgia, others ascribe the pain to the cystic degeneration of the ovaries. The pain is probably due usually to the varicose condition of the veins of the broad ligament.

"Patients with retroversion in about 56 per cent. of cases suffer some disturbance of the menstrual function (author's figures). A secondary dysmenorrhea is often present, manifested by an exaggeration of the symptoms that occur during the intermenstrual period. Thus, backache, pelvic pressure, pain in the side are increased during catamenia, as are all the nervous and general and constitutional symptoms.

"Patients with congenital retroflexion usually suffer from essential dysmenorrhea, the pain often being located in the back instead of in the abdomen. True dysmenorrhea is more common in backward displacements when there is also flexion. Abnormalities in the menstrual flow are not infrequent, though not constant. Owing to the obstruction of the circulation and the permanent hypertrophy of the endometrium that are common in the retroverted uterus, various degrees of menorrhagia are encountered.

"Irregularity in the time of the intermenstrual periods is apt to exist, the irregularity consisting usually in a too frequent incidence of the menses.

"Leukorrhea is often present as a result of a hypersecretion of the congested endometrium.

"Constipation is present in about 51 per cent. of cases (author's figures). This may possibly be due to partial obstruction of the rectal lumen, but it is more probable that the pressure of the uterine body on the wall of the rectum interferes with the normal muscular movements of the gut, thus diminishing its expulsive force.

"Retroversion is said to cause symptoms of irritable bladder by a backward pull on the bladder wall. This is probably not true. The bladder is an extraordinarily adaptable organ, and when one considers abnormal positions in which it can be placed without symptoms during various reconstructive operations it is difficult to believe that the slight traction exerted by a retroposed uterus could cause definite symptoms of irritability. Irritable bladder is frequently caused by childbirth, and may thus be associated later with a retroversion, without causal relation between the two conditions.

"Retroversion is a not uncommon cause of abortion. This may be due to the permanent hypertrophy of the endometrium, which offers a poor soil for the growth of the ovum, or it may possibly be referred to the imperfect circulation of the maternal blood through the uterus. Impaction of the pregnant uterus in the pelvis may cause abortion as a result of interference with the growth of the uterine musculature.

"Women with retroversion are apt to be sterile, especially those in whom the retroversion is due to congenitally weak supports.

"In women with retroversion acquired from childbirth the sterility, if present, is probably the result of the displacement of the cervix which no longer dips into the receptaculum seminis. In women with naturally insufficient supporting tissue the same cause may act, but there are also apt to be other manifestations of infantilism, which may combine to prevent fertility." (Graves)

The treatment is usually by pessaries or by a surgical operation to fit the case. The same may be said of the other aforesaid malpositions of the uterus.

In slight cases of malposition of uterus reposition of the organ with the aid of pessaries and rest will effect a healing. For more severe cases of retroversion (the most common malposition) Olshausen's operation is much used. This consists in suturing the round ligaments on each side of the fundus.

Symptomless retroversion should be left to nature unless it causes sterility or tendency to abort.

It is for the surgeon to determine what method he shall choose to restore a displaced uterus to its proper place and augulation and fix it there. Minor fixations may be operated by bimanual intravaginal bloodless operations; but the severer cases demand the abdominal route.

Retroversion and retroflexion are rare in nulliparae: they are common in women who have borne children. The malposition, through a severe pressure on the uterus, may occur after pregnancy has been set up; usually these displacements precede the pregnancy. The percentage of this malposition is unknown because in the majority of cases by spontaneous restitution the uterus draws itself up out of the pelvis and rights itself.

No symptoms are observable until the gravid uterus begins to press on the neck of the bladder. At the end of the third month there will be frequent, painful, difficult, incomplete micturition.

According to De Lee, spontaneous rectification is the rule about the third or fourth month. This cure is aided by rest in bed. The patient sleeps on her side in what is known as Sims' position. (See Dorland's Med. Dict.) The buttocks are slightly elevated. Three or four times daily she should maintain the knee-chest, or genupectoral position (See ibid.). This position may be held for twenty or thirty minutes at each interval.

The bowels and bladder must be frequently emptied by careful enteroclysis and catheterization.

"Most cases of retrodisplacement terminate by spontaneous reduction or respond easily to art, and nowadays, when women consult the physician so readily, a neglected case is a rarity." (De Lee)

Spontaneous abortion is a frequent termination of pregnancy in a retroflexed uterus. This may often be avoided by proper measures.

The dreaded event is the incarceration of the uterus in the pelvis. The enlarging uterus becomes wedged into its unnatural site. All the symptoms are aggravated as the pathologic state continues. The urine is dammed up in the bladder and presses back on the kidneys. De Lee records a case where 96 ounces of urine were retained in the bladder. The residual urine may cause uremia, gangrene of the baldder, sepsis, eclampsia, or convulsions, general peritonitis, death.

Patient, persistent measures as aforesaid often replace a gravid retroflexed uterus.

When these measures fail, two courses offer themselves.

Most medical authorities advise to puncture the membranes with a sharply curved sound or male bougie, and thus induce abortion. If the os uteri be inaccessible, the puncture is made through the posterior uterine wall. In this case the puncturing is by means of an aspirating needle and syringe. Bumm reports a case where he drew off the liquor amnii with such syringe so that the uterus thus relieved of part of its weight lifted itself gradually out of the pelvis, and abortion did not follow. Such result is extremely rare.

It may be noted here that full term pregnancy in a retroflexed uterus is impossible.

There is therefore but one lawful course in an obdurate case of retroflexion. The belly must be opened in the interests of the child; the imprisoned fundus uteri must be released; and the gestation must be allowed to go to term.

Abortion may follow this operation, but it is an indirect effect; and indeed not a necessary indirect effect. Doctors Capelmann, Olfers, and Marx affirm that the emptying of an obdurate incarcerated gravid womb be lawful. Their reasons are sophistry.

It is an indirect destruction of life: this we grant; but by it the foetus is deprived of a vital element necessary for his life. This may not be done. Dr. Marx himself declares: "There is no more direct means for the procuring of abortion than the perforation of the amnion and the reduction of the amniotic sac."

If reposition would indirectly kill the child, nevertheless it could be done, because the *finis operis* is not abortion. But the *finis operis* of the draining of the amniotic liquid is abortion. It falls under the prohibitive decrees of the Holy Office. Moreover it is not safer for the mother than celiotomy and uterine reposition. Martin found 57 cases of this rare malposition. In 50 cases reposition was made; 5 aborted, reposition followed; in one case the woman died before operation; in one case the amnion was pierced: both fetus and mother died.

The Catholic position is well enunciated by the eminent Dr. Stoehr:

"Under these circumstances I would unhesitatingly propose laparotomy, which is no longer such a frightful operation in view of our antiseptic safeguards; and thus I would remedy the locking by reposition through laparotomy, and probably save both mother and child.

"This operation has sometimes been performed also in case of the locking of the vacant uterus, with good results (Sanger, Olshausen); and if abortion follows occasionally, it is certainly indirect."

In the case of procidentia of a gravid uterus "spontaneous retraction of the prolapsed part usually occurs. . . . If spontaneous reduction does not take place, it is a simple matter to replace the womb and hold it in position by tampons or an air pessary until it is too large to come down." (De Lee)

Procidentia or prolapse of the pregnant uterus, of such character that it can not be replaced to go to term, may be emptied at any stage of gestation provided no direct lethal operation be wrought on the fetus. The underlying principle controlling the operation is, that the organ is diseased, and threatens the woman's life. The operation is not a direct killing of the fetus.

Normally the uterus is anteverted. In pregnancy this anteversion is increased. When this becomes pathologic it is called pendulous abdomen. This condition gives rise to dystocia or difficult parturition. It may also cause malpresentations of the foetus.

No woman should wear a corset; much less a pregnant woman. Most of the "maternity corsets" are harmful. In a tendency to pendulous abdomen the woman should wear an approved surgical binder to support the sagging organ. Patterson's Abdominal Supporter is endorsed by Hirst, De Lee, and others.

MALFORMATIONS OF THE SEXUAL ORGANS

Congenital malformations of the sexual organs are rare. They are rarer in men than in women. Vecki examined six thousand conscripts over twenty years of age for the Croatian Government. He found in the number only three with notable malformations of the genitals.

We have spoken of hypospadia and epispadia.

In the Medical Record, Feb. 19, 1898, Dr. Robert T. Harris declared that he had found in medical literature only six cases of congenital absence of the penis. He estimates the percentage of this abnormality one in thirty millions. In the fifty years up to 1898 two cases had been reported in the United States.

In such cases the urethra opens into the rectum or out through the perineum.

Garnier reports a male child born in 1854 in France, and examined by the famous surgeon Nélaton.

The infant had no penis and no urethral opening. The urine was voided through the rectum.

In case there be healthy testicles and an opening for the semen, a man devoid of penis may be capable of coitus, by depositing the *semen* on the *os externum vaginae*. Fecundation would be very rare.

Congenital absence of both testicles is also very rare.

A more common defect, but still relatively rare, is congenital smallness of the penis. Rare cases are recorded where the body of the penis was absent: the gland alone was developed.

If the testicles are normally developed, and erection is possible, the smallness of the penis is no obstacle to a fertile marriage.

The pleasure of coitus will however be much impaired, since the penetration of the vagina is not sufficient to satisfy the natural longing of the normal woman. Impregnation also is rendered less liable.

An excessively developed penis might render coitus impossible with a woman whose vagina is too narrow to admit the abnormal male organ. In such cases relief is at hand, for the marriage is invalid, and may be dissolved by the proper course.

Such a man is relatively impotent to consummate marriage with a woman whose organs are too narrow to admit the abnormal penis. He may be perfectly capable of coitus with a mate of similar development.

Dr. Descourtilz relates the case of a penis thirteen inches in length. Unrestrained coitus with such an organ would rupture the woman's womb. If the thickness be normal, coitus may be rendered safe by adjusting a ring about the root of the penis, which inhibits an excessive intromission.

A rare curvature of the penis may arise from defective development of the corpora cavernosa. A high degree of this would prevent coitus.

The penis may be deficient in erectile tissue and fail to attain the erection necessary for coition. The organ may be of normal size, but flabby: Vecki declares this condition frequent: most authors ignore it.

Some authors hold that narrowness of the *orificium externum urethrae* may exist to such a degree that impregnation be impossible. Such malformation, if ever found, is extremely rare.

An excessively long prepuce is not a malformation, unless it adheres to the gland. Phimosis may attend on a long prepuce. The condition is easily remedied by surgery. The phimosis of infants should be carefully observed and relieved by surgery.

Circumcision as a rule is contraindicated. The prepuce is nature's covering for the gland. Abscission of prepuce renders the gland less sensitive and dulls the pleasure of coitus.

All male infants have an adherent foreskin at birth. Most of these right themselves in due course of time. The average boy will pull back this foreskin and break up the adhesion as he grows conscious of sex. The proper care of the male genitals requires that from babyhood up the prepuce should be gently pushed back and the gland washed. It might be well to await nature's process during the first year if the adhesion be strong, but a moderate degree of retraction will have no harmful results. Such force, if exerted after the sex instinct be awakened, may lead to masturbation. The gland must be cleansed. This cleansing is more imperative after smegma begins to form. If the prepuce be such that it hinders removal of the smegma then circumcision is indicated. Circumcision is a recognized preventative of masturbation, but should be employed only when necessary. Parental care and vigilance are the great factors in pediatrics.

If the frenulum be too short it draws the organ down, and interferes with coitus. The surgery is simple.

Monorchidia is the state of a man, of whose testicles one has failed to descend from the abdominal cavity into the scrotum.

A rarer case is *cryptorchidia,* in which both fail to descend.

Monorchidia is not incompatible with the *potestas coeundi et generandi.* There are many cases recorded where monorchides have begotten children.

Cryptorchidia is very rare, and is yet imperfectly studied. As a rule physicians consider cryptorchides sterile, but not impotent. Godard, Hunter, and Curling found no spermatozoa in cryptorchides.

Guinard is not pleased with the term monorchidia, from *monos, single,* and *orchis, a testicle.* It seems to him to denote an absence of the second testicle, whereas it is only hid. He substitutes the term *monocrytorchidia,* in which the element *kryptos, hid,* saves the meaning.

He reasons well.

For *cryptorchidia,* with good reason, he substitutes *dicryptorchidia,* whose meaning is obvious.

It is his opinion that *dicryptorchides* are always sterile because of the undeveloped state of the ectopic testicles.

On the contrary Taylor cited by Hofmann *(Lehrbuch der gerichtlichen Medicin,* pp. 59, 60), declares that he knows four cases in which

children were begotten by cryptorchides. Pelikan cites one case, and Beigel found sperma in the semen of a cryptorchid.

Cryptorchidia may not therefore be alleged as a diriment impediment; every case must be examined and rest on its merits. The presumption is in favor of a diriment impediment.

Hermaphroditism.—True hermaphroditism means a state of double sexuality, in which an individual is equipped with both male and female reproductive organs, external and internal, and in which both sets of organs perfectly function. There must be ovaries and testes capable of performing their functions.

True hermaphroditism is the normal condition of many invertebrates; it is not uncommon in the lower vertebrates; it is of rare occurrence in birds and brute mammals.

No true hermaphroditism has ever been found in man.

Pseudohermaphroditism has been observed in the human genus. It is rarer in women than in men. In such cases organic or functional defects shall usually be found in the sexual organs.

L. Pick (1914) declares that there are four authentic cases where combined ovotestes were found.

Béclard declares that he found male and female external genitals in the same person, but the internal organs were wanting to complete the true hermaphrodite.

The ovotestes are not in the scrotum but in the abdomen. Sometimes the ovotestis is found only on one side.

Hermaphrodites are classed as *androgynoids, gynandroids,* and *neuter hermaphrodites.* The androgynoid is a male hermaphrodite with female characteristics. This type is often a cryptorchid; the penis is small; hypospadia is usually present; the breasts are womanlike (gynecomastia); there may be a rudimentary genital cleft; the beard is scanty or entirely absent; the voice usually feminine; and the behaviour lacking in virility; fourteen cases are reported.

The gynandroid is a female with male characteristics. These male characteristics vary in individual cases. The clitoris is generally hypertrophied, and imperfectly imitates the erection of the true penis. The genital cleft and vulva are rudimentary. Atresia of the vagina may be present. The closed labia may present the appearance of a scrotum: the labia contains the ovaries. The breasts are undeveloped; the beard is masculine; the voice is coarse.

Walter Simon in *Virchow's Archives* (vol. 172) describes a rare case of hermaphroditism observed by Garré. A person brought up as a man, at the age of 21 developed gynecomasty and monthly discharge from a scrotal fissure. The erection of the penis was often voluptuous and discharged a whitish mucus. The contour of his form and his facial expression became feminine. A swelling resembling an inguinal hernia was opened on the right side, and there were found an ovotestis, an epididymis, a parovarium, a spermatic cord, and a fallopian tube. The man was sterile. Male hermaphrodites in many cases have atrophied testes.

The neuter hermaphrodite is a type in which the reproductive organs are undeveloped and in many respects undifferentiated. It is difficult to determine whether there be present an enlarged clitoris or a penis; whether

the undescended sexual glands be ovaries or testes; whether the fissure be a vaginal outlet or a bad case of hypospadias; whether the hermaphrodite have atresic vulva or a scrotum. Sexual inclination is not always a sure determinant; there may be sexual inversion without anatomical malformations. Many erroneous determinations of sex have been cleared up by the dissector's scapel. Surgery has revealed others. True menstruation must come from a functioning womb, but it is difficult sometimes to differentiate true menstruation from pseudo-menstruation.

The two great authorities on hermaphroditism are Franz Neugebauer *(Annual for Sexual Intermediate Stages,* 1902, vols. II, IV; 1903, vol. V; 1904, vol. 6; 1905, vol. VII; 1906, vol. VIII.) and Magnus Hirschfeld, "Sexual Links", Leipzig, 1905).

Hirschfeld cites one very interesting case of a male hermaphrodite forty years of age, Friderike N. The hermaphrodite had been brought up as a woman. The sexual inclination was masculine. Dissection revealed a debased gland resembling most a testicle, out of which issued a debased spermatic cord. In the left inguinal canal was an atrophied reproductive gland of indeterminate character. The penis much resembled an hypertrophied clitoris. The scrotum had the appearance of labia majora and minora, but the inlet was caecal. No internal female reproductive organs could be detected. The prostate gland was doubtful. In the report of the case H. Friedenthal declares that he had found numerous normal spermatozoa in the man's semen.

Certain pathologic states or surgical operations may cause a change in the secondary sexual characteristics,—stature, muscles, skin, voice, bodily contour, beard, etc. A case is reported on good authority in which a tumour on the suprarenal glands induced male characteristics in a girl. The removal of the tumor restored her.

Dr. F. C. Cave (Journal Psycho-Asthenics, March, 1911) declares that an asexualized boy in the Kansas State Home for Feeble-minded "assumed the feminine type, high pitched voice, development of the breasts, loss of hair on face, change in bodily contour."

In the *Gazette des Hôpitaux* of 1848 Dr. Follin published the result of an autopsy operated on Antoine Dubois. The dissection revealed a rudimentary vagina and uterus. The vagina opened into the urethra. On the right side there were a round ligament, a tube, but no ovary. On the left side the conformation was the same, except that there was found a debased testicle, with *vasa efferentia.*

The external genitals consisted of a penis about one and one-half inch in length, hypospadiac at the root. The penis was flanked by two protuberances, which resembled neither the nymphae nor a scrotum. The person had no sexual desire, and had never menstruated.

Sometimes the pseudo-hermaphroditism consists in supernumerary organs.

Mayer reports a case of a foetus of six months, which had a perfectly formed male apparatus, and also an uterus and vagina, which opened into the urethra, near the neck of the bladder.

Testicles and ovaries are sometimes found in the same individual. The monstrosity may be unilateral or bilateral.

We cite a few cases, which seem to be authentic.

In 1858 in the Infants' Hospital in St. Petersburg, a premature birth named Paul Bogdanoff died at seven weeks. Dr. Rauchfuss dissected it. In 1872 Heppner published a description of the preserved organs.

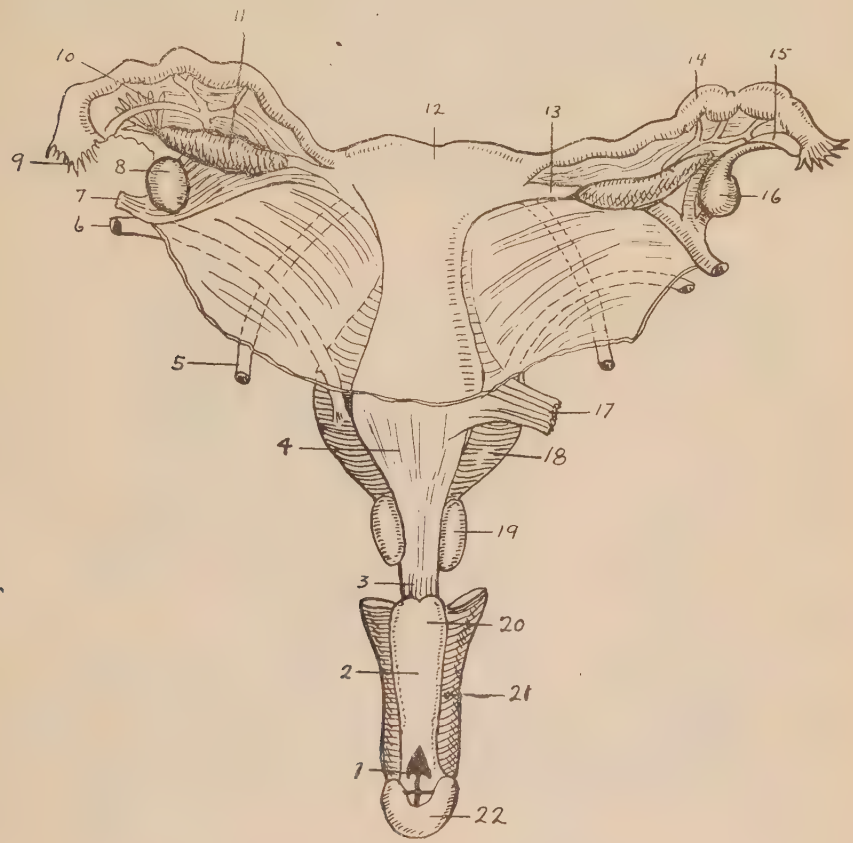

Fig. 37—Heppner's Schema.

1. Urethra.
2. Urethra.
3. Membranous Urethra.
4. Vagina.
5. Utero-rectal Ligament.
6. Ureter.
7. Round Ligament.
8. Testicle.
9. Ampulla of the Tube.
10. Epididymis.
11. Ovary.
12. Fundus of Uterus.
13. Utero-ovarian Ligament.
14. Fallopian Tube.
15. Hydatid.
16. Testicle.
17. Ligament.
18. Bladder.
19. Prostate Gland.
20. Bulb of the Urethra.
21. Corpus Cavernosum.
22. Glans Penis.

The external genitals were of the masculine type. Hypospadia was present. The urethra was well developed, but lacked Cowper's glands. The prostate gland was in place, and as the urethra penetrated it, the urethra split into two conduits, the urethra proper and a vagina, which communicated with a normal uterus. The Fallopian tubes were well developed, but presented many curvatures. The ovaries were normal and in place. Underneath the distal aspect of each ovary were the testicles. Under the microscope the Graafian follicles were found in the ovaries and vasa efferentia in the testicles.

In the year 1891 M. Polaillon communicated to the Academy of Medicine at Paris:

In the year 1887, a person apparently of the female sex had been examined by M. Polaillon. The external appearance of the body and the

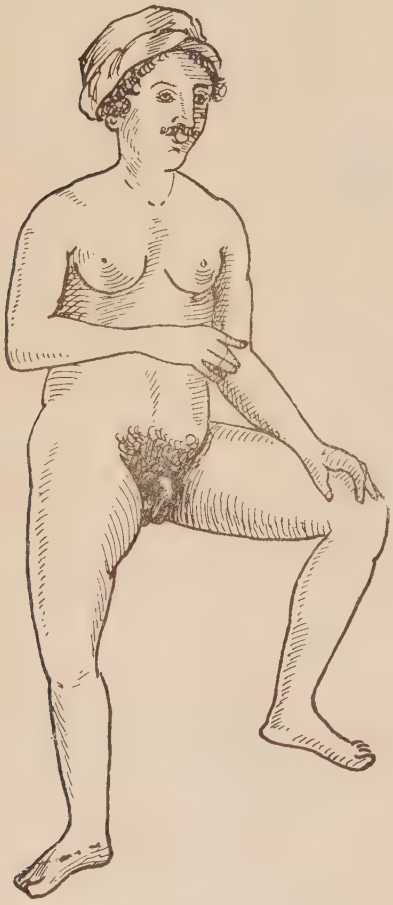

Fig. 38—Marie-Madeleine Lefort at the age of sixteen years (Debierre)

Fig. 39—Marie-Madeleine Lefort at the age of 65 years (Debierre).

characteristics seemed feminine, although there was a complete absence of the menses. The vagina was a blind pouch: no womb could be found. The person seemed to enjoy normal health, and the case was dismissed as inoperable.

Shortly afterward the person became a prostitute, and in the year 1890 died.

The autopsy revealed that the continual attempts at coitus had elongated the vaginal blind pouch to a finger's length. There was no uterus or adnexa. There were two atrophied testicles, a debased vas deferens, but no prostate.

One of the most famous pseudo-hermaphrodites recorded in medical annals is Marie-Madeleine Lefort. She was examined at the age of sixteen years by Béclard, and at the age of sixty-five years by Horteloup.

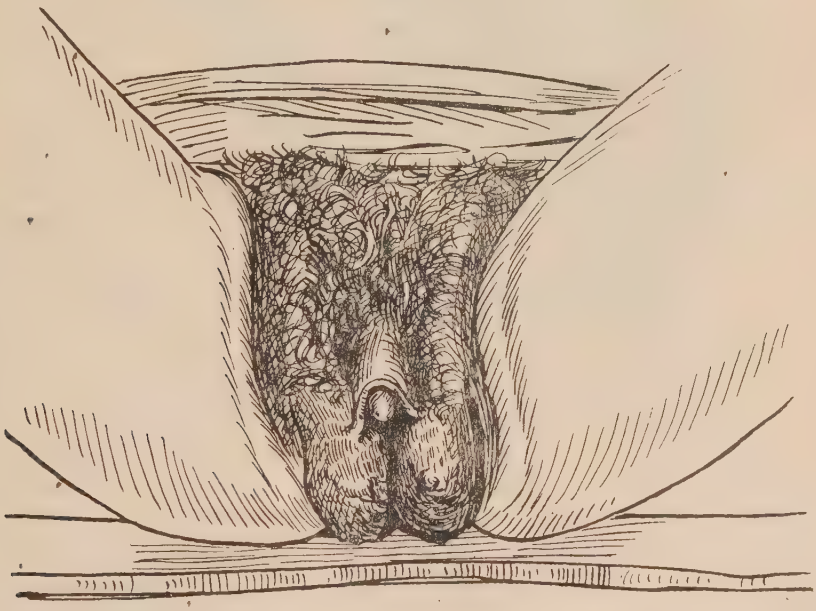

Fig. 40—External Genitalia of Marie-Madeleine Lefort.

Béclard reported well developed breasts, with a few hairs, a bearded face, a mons Veneris; under the mons Veneris a clitoris, in the flaccid state nearly three inches long. The gland is imperforate. On the under side the clitoris is furrowed, and the furrow is pierced by five small apertures in the median line. Under the clitoris there is a slit flanked by small labia, covered with pubic hair. At the anterior commissure of the labia, immediately under the clitoris, is a rounded opening, which is without difficulty explored by a medium-sized sound. The principal part of the urine is voided through this orifice, but some urine trickles through the five small openings in the floor of the clitoridian furrow.

Marie menstruated since her ninth year, and feels feminine sexual impulses.

Béclard pronounced her a woman.

Many scientists denied M. Béclard's decision.

The subject died at the age of sixty-five. Horteloup's autopsy confirms Béclard's declaration. Marie Lefort was a woman, with an occluded vagina and with male characteristics.

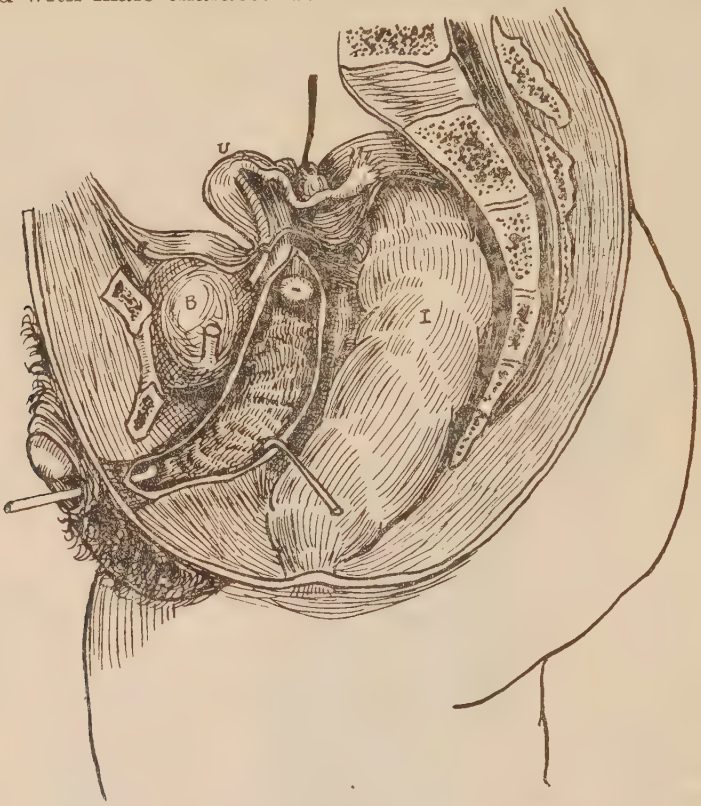

Fig. 41—Sagittal section of Pelvis of Marie-Madeleine Lefort.

U. Uterus. B. Bladder. I. Large Intestine.
A sound is introduced into the single opening beneath the large clitoris.

At times the visible characteristics are very deceptive. Persons who during all their lives have played a masculine rôle have been found pregnant.

Of these wretched freaks of nature sadly and truthfully Dr. Debierre declares:

"Physiologically the hermaphrodite is a debased being, impotent and sterile; a denatured being even in his mentality and inclinations by reason of his devious and perverted sexuality."

It must be stated that at times the predominant sexual rôle perfectly functions though attended with non-functioning opposite sexual characteristics.

Many hermaphrodites may be classed as monsters. Many of them die in infancy or in childhood.

THE SEXUAL FUNCTIONS

We believe that sex education should not be publicly imparted. The term publicly is here employed to exclude lectures to groups of either sex. The very fact that any degree of publicity is given to the discussion of these facts tends to weaken that inborn sentiment of modest reticence and shame which is one of the most powerful shields of chastity.

Specific sex instruction can never be given to groups of the two sexes.

Only with great care, and with a prudent reserve, may it be given to one-sex groups.

General instruction on the virtues of chastity and modesty, and on the contrary vices may be given in catechetical and ethical lectures.

In biology and physiology, with severe aloofness of all sex consciousness, the process of reproduction may be outlined, but personal implications should be avoided.

Of course, we have not in our purview medical lectures, wherein a prepared studentry are able to receive all the data pertaining to anatomy, physiology, and materia medica. Our present treatise is concerned with grammar schools and high schools. A person fit to enter a university should have formed a character able to discuss sexual phenomena as necessity may demand.

In the ordinary school curriculum, therefore, very little may be attempted with the mixed classes, save general principles of modesty and propriety.

In this period of childhood parental guidance is paramount. In the case of Catholic children the home influence is reinforced and further developed by the confessional. The fact that the home influence in America is enfeebled by our methods of life, can not be alleged as a justification of a transfer of obligation to the school. The school is inadequate to supersede the home. An ignorant conception of sex is better than scandal of the little ones, even though it be *scandalum pusillorum*.

Dealing with pastoral sex-teaching the Catechism of the Council of Trent declares:

"In the exposition of this matter, however, the pastor has occasion for extreme caution and prudence, and should treat with great delicacy of language a subject which requires moderation rather than copiousness of speech, for there is reason to apprehend that, by fully and diffusely detailing the variety of ways in which men may depart from the injunction of this law, he may perhaps light upon those topics which often serve rather to inflame than extinguish lust." (Chap. VII. I.)

In the high school as usually conducted by our Catholic parishes coeducation must exist. Moreover, in most cases, the teaching is done by nuns. To the mixed groups nothing more in sex education than general principles of decent living, the repulsiveness of vice, the dire hygienic evils of social sins, the beauty and nobility of honor, the sorrow of sin, and the necessity of the grace of God may be given.

In academies exclusively for girls taught by nuns, the question is solved. Noble knowledge of the facts of life, sympathetic personal interest in every pupil, examples of true chastity and modesty pervade all. Girls educated in our best Catholic academies have sometimes fallen; but the fall was not through ignorance or lack of proper training. In human life some things shall go wrong till the end of time. There was a failure in Christ's exclusive apostolic college.

In boys' high schools taught by men, much may be done. In the regular classes a plainer and more extended presentation of sex facts may be delivered. Lectures by competent physicians may be added to the curriculum. In the physical culture class, the great laws underlying life may be alluded to in their relation to the development of manhood.

Sex should not be singled out and treated alone, but should be coordinated with life's activities, duties, and ideals. To put special emphasis on sex tends to create an abnormal sex complex, and to overstimulate the sexual processes.

In coeducational schools the classes should never be segregated in anticipation of sex education. Such segregation would create in the pupils sex consciousness, pruriency, and undue sex emphasis. The groupings therefore must be arranged in such way that the thought of sex enters not; and then in these automatically segregated groups advantage may be taken to inculcate, from time to time, sex education as a normal allied theme naturally arising out of the other branches of the curriculum. As far as possible the adolescents should receive sex instruction without realizing it.

A morally clean strong personality alone can impart this instruction, and impress his own honorable decent attitude towards nature on his pupils.

Men ask, Why should we be ashamed to discuss processes which are as necessary to the preservation of the human race as the process of respiration or digestion?

The answer is obvious. The entrance of sin into the world, entailing as it does the mighty combat between body and soul, moved the first parents of humanity to the primal sense of shame. Man and wife alone of human kind in the vast universe felt a consciousness which, then first awakened, is omnipresent in humanity, and can not be eradicated from the children of men. Sin and degradation may distort it, but they do not efface it. I have seen a drunken prostitute blush crimson and suffer laceration of the flesh of her hand in her effort to draw over the *partes dishonestas* of her body her torn clothing, which had become entangled in the wheels of a rude conveyance, which was bearing her to the common jail.

Physicians testify that women of the demi-monde will not permit more than a casual inspection of their genitalia to their "lovers"; and only

when necessity requires it, will they permit minute inspection to the physician.

Among the earliest memories which the writer cherishes of very early childhood was a dread lest some of the rough men with whom he conversed should submit his body to any immodest looks or touches. A bath even by the modest hands of a most chaste Christian mother was a tragedy.

All sex education which ignores this beautiful instinctive sentiment is wrong. Not only does the instinctive sense of shame tend to protect humanity, but there is a certain instinctive power in the child to understand the facts of reproduction. It is not the writer's meaning to assert that without instruction from some one a child may come into possession of a complete sexual biology. But as in the other affairs of life much of our knowledge is made up of deductions from common sense, so there is what might be called a sexual sense, which is nature's provision for what is necessary for nature itself.

The writer never remembers to have received in childhood or adolescence any proper instruction on the sexual life. In his Christian education it was inculcated that immodesty in thought, word, and deed was a sin, and that teaching, working with the innate sense of shame, sufficed to equip the mind with the proper attitude towards these things.

The knowledge of the processes developed at puberty came to him from the confessor, and further knowledge came by the study of the proper literature on the subject. The retrospect shows that the knowledge proper to the various stages of development seemed to come, as it were, naturally.

It seems therefore safe to assert that, where parental guidance, the Christian Catechism, and the confessional come in at their proper time into a boy's life, the sex problem is practically solved for the boy.

The United States Public Health Service recently called on educators and parents to give frank, fearless and honest sex instruction to children from kindergarten through college. A symposium on sex education prepared for teachers and made public by Dr. Hugh S. Cumming, surgeon general, asked for elimination of adult taboos, fear, false modesty and shame which were declared to have dominated the situation too long. It urged abandonment of old bogies for frankness in guiding adolescents. It declared America must brush aside the prudish attitude which prevails toward sex education, and recommended that schools make provision for instruction on human reproduction and personal hygiene. Sex education, it pointed out, is more than instruction concerning sex. It means a comprehensive and progressive process of care, guidance and example from infancy to maturity. "Sex instruction," the symposium continued, "must differ in one important respect from other scientific instruction in that it must not seek to interest and awaken curiosity in the subject, but merely to satisfy the curiosity which spontaneously arises in the child's mind, by answering his questions truthfully but only so completely as may be necessary to give proper guidance to his conduct, both hygienic and ethical. The less children and youth think of sex, and the later they mature sexually, the better both physiologically and ethically."

The last sentence here quoted is very true. Touching the other recommendations, we believe that sex instruction should be given to children gradually, prudently, cautiously, religiously. The child should be taught

that his body is a holy thing, a temple of the Holy Ghost. This knowledge can not well be imparted to the group. In a group the child will not ask questions. The presence of the other children is a stimulus to levity. The knowledge is vulgarized.

The parent, the physician, the competent teacher (rarely found), and, better than all, the priest, in the privacy that this delicate theme demands, may and should impart a graded course of sex knowledge.

"Curiosity is as natural to an active mind as hunger is to a vigorous body. Sooner or later the intelligent child of pre-school age will ask questions regarding sex.

"If the child has been properly shielded from suggestive sights and vulgar speech, his interest in sex will develop slowly. His natural wonder will prompt him to ask only questions, the answers to which he is able to comprehend.

"Happily, almost every modern mother is able to answer these questions, giving her child the plain facts without embarrassment. Mid-Victorian prudery, so disastrous to health and morals, has been discarded. Freedom of both thought and speech may be employed with the child, bearing in mind always the following balancing truths:

"Although sex is not an indecent or a polluting subject, it is a private one, and a certain reticence in talking of it still marks the conduct of people of good breeding.

"While no shame attaches to any necessary exposure of the person, our civilization still demands that some portions of the body be covered.

"It is the duty of the parents to protect the child from conditions in his home that will bring to him knowledge of sexual relations before he is old enough to be ready for such knowledge.

"It is the duty of the mother to keep watch against any tendency on the part of her child to use vulgar speech or to indulge in conduct which offends the standard of modesty and good taste in his own family. If the child is detected in such an offense, however, she must remember that she has to deal with a weakness, not a crime.

"The determination of the modern mother never to be shocked by anything, no matter how shocking it may be, deprives the child of a check upon dangerous tendencies and leaves him, to that extent, motherless.

"Although she rightly repudiates a warped attitude toward the facts of life, the mother dare not, for her children's sake, allow flippant indecency of speech or careless license of manner, for these offenses against good taste lead to unclean thought, which is an offense against good morals.

"Protecting a child from dangers that have to do with sex is a very different task from protecting him from other dangers. It is quite simple, for instance, to teach him to avoid the path of an oncoming automobile or train.

"The pre-school child usually need not know anything about the dangers that have to do with sex. His only contact with the subject should be that made by his natural wonder. It is the duty of his mother to satisfy this healthy curiosity and then stop; making certain, however, that he will bring to her all further questions as they occur to him.

"With the dawn of adolescence, however, hitherto undreamed of forces and impulses, with their resulting temptations, begin to obtrude them-

selves upon the child's consciousness; and then it is sharply imperative that he be given full information regarding sexual law and the care and mastery of his own body, whether he has asked for this information or not.

"The obligation of the father of a boy is quite as great as that of the mother. After the boy has left childhood and entered upon the slippery paths of adolescence, he must have the wise counsel of his father or of some other man.

"Preparation for their difficult task must be made by both father and mother while the child is still too young to require anything in regard to sex except the answers to his questions. They should procure and study one or all of many enlightening books on the subject." (Mrs. Susan V. Helliwell)

Of course, this supposes that the confessor be alive to the obligation of his office as spiritual physician. This agency works with the care of the father, and even the mother. Society would be blessed indeed if its mothers were equal in character to St. Monica, and yet she gave to the great Augustine some very practical counsel on sex matters: "But while in my sixteenth year I resided with my parents, having holiday from school for a time . . . the thorns of lust grew rank over my head, and there was no hand to pluck them out. Moreover when my father, seeing me at the baths, perceived that I was becoming a man, and that I was stirred with a restless youthfulness, he, as if from this anticipating future descendants, joyfully told it to my mother. . . . But in my mother's breast Thou hadst even now begun thy temple, and the commencement of thy holy habitation, whereas my father was only a catechumen as yet, and that but recently. She then started up with a pious fear and trembling; and although I had not yet been baptized, she feared those crooked ways in which they walk who turn their back to Thee, and not their face (Jer. II, 27). . . . And whose words were they but Thine, which by my mother, Thy faithful handmaid, Thou pouredst into my ears, none of which sank into my heart to make me do it. For she desired, and, I remember, *privately* warned me, with great solicitude not to commit fornication; but, above all things, never to defile another man's wife. These appeared to me but womanish counsels, which I should blush to obey. But they were Thine and I knew it not" (Confessions Bk. II. III. 6, 7). Continuing in the Eighth Parag. of the same chapter the great saint tells us that his mother's counsels on chastity were most explicit. What St. Monica did for St. Augustine every Christian mother may do for her son with perfect propriety. However, as the customs change, as time progresses, it may not be possible for the mother to instruct the boy in that sex-knowledge that at puberty he should know, especially the knowledge of the normal seminal emissions, the evil of masturbation and of the dreadful character of venereal diseases. The father also, as often happens, may through a certain shyness be incapable of imparting the knowledge. The prudent confessor, and the conscientious physician are able to supply the need. But great care must be shown in selecting a physician. The medical profession is loaded down with unscrupulous charlatans and quacks, who often abuse the innocence of youthful clients for a nefarious lucre.

Modesty is born in children. In his work as pastor of a large parochial school the writer has often observed that some of the little boys would not

use the urinals, but instinctively availed themselves of the greater privacy of the cabinets. Now the urinals were properly constructed, with lateral projections preventing any immodest observation.

Some little girls of the same school suffered physical suffering, because they were ashamed to leave the room to go to the toilet, although their toilet was in a part of the building to which there was no communication from the men's department.

Little Sicilian boys would cry, struggle, and show the greatest anguish because the physician in his ministrations found it necessary to uncover their nakedness.

These personal observations are cited to show that modesty is the birthright of childhood, and with the grace of God is the most powerful ally in preserving the moral law. All sex education must take cognizance of this native innocence of childhood, and work with it.

The following true incident will further illustrate the point. In the family of one of the writer's dearest friends are two girls, one of seventeen, and the other fifteen years of age. They have the natural gifts of health, beauty, and intelligence, and the supernatural gifts of faith, hope, and love. This home deserves a still more special mention. It is the home of a comparatively poor man, and yet is one of the happiest places known to the writer. The parents are the companions of their numerous children, and enter into all their plans and hopes. In an experience of ten years' duration the writer never heard a serious reprimand given to one of the children, nor saw its necessity. There was a freedom and healthy exuberance of life there, but never an excess. The children romped, sang, read, played games, scuffled, wrestled, boxed, played cards, and yet were always first in their studies, and always helpful to their parents. If father or mother wished a book, a paper, a garment, etc., some child ran and brought it at once. There was no nagging or undue repression of their play on the part of the parents. If a child came in with torn stockings, or a torn gown, or a sliver in the finger or such like, the mother indulged in no scolding, but at once assisted the child as the need demanded.

One day while the writer was visiting the family, the aforesaid young girls ran in from the hennery announcing that they had set a hen on a batch of eggs. The mother smilingly said: "The eggs are not fertile, you will have to interrupt your plans, as the eggs will produce no chicks."

The children did not understand the biological fact conveyed by the words of the mother, but they knew that it was something that mother would communicate to them at the proper time. They exchanged glances, and then ran away to remove their pet hen from her fruitless labor.

These children were fully acquainted with the physiology of their sexual processes, as far as their age required. The knowledge of embryology was reserved for maturer years.

Protection of health and regulation of conduct are the two aims of sexual physiology. The normal child about the age of 9 or 10 will begin to receive permanent impressions of sex. Long before that the Christian child shall have begun to develop a Christian character based on spiritual ideals. He does not know and needs not know the intricate and delicate sexual processes of the human organism, but he knows the meaning of the law of modesty. The teaching on this subject received from parents,

teachers and books is confirmed by the testimony of the law written in their hearts, their conscience bearing witness therewith. (Rom. II, 15)

It is not the writer's meaning that children left to themselves, with no guide but the law of nature, will be moral by instinct. Care and culture are needed, but this influence of the teacher is helped by the inborn sense of modesty in man. No man submits even to a surgeon's examination of his genitals without a feeling of embarrassment, and shame.

In traveling in the Orient the writer observed great modesty in the conduct of the Bedawin.

The secrecy therefore that clusters around the sexual life is natural; temptation must overcome it, to move the man to sin. Love and the consciousness of the lawfulness of conjugal union must overcome it in the act on which reproduction of the race depends.

The more education develops and strengthens this native modesty the stronger the safeguard against any attack. The desideratum is: Chaste sex education, commensurate with the child's age, environment, and propensities.

Poor Nan Britton was ignorant of the physiology of birth, ignorant of the physiologic process of menstruation: easily she fell by the influence of an unprincipled villain.

Sex education therefore may begin with the dawn of reason by teaching the child that certain things are naughty. The sex education conducted, not as a school for cooking or manual training might be conducted, but conducted by those mentally competent, and with due regard to the sacredness of the subject may progress *pari passu* with the growth of the child. Close observation should be kept of the development of the child, and if there come to him from vicious companions impressions "slimed over with nastiness," these are to be counteracted at once by a true reverential presentation of sexual life, as far as is requisite for the occasion. It would be wrong to leave the child in ignorance of the true nature of the matter which he has heard. Sex impressions are easily received and long remembered. The truth, the whole truth, and nothing but the truth, should be imparted; and then it should be placed in its proper setting, enshrined in the beauty of God's law of life, the sacredness of love, and the nobility of chastity. Sex instruction should not run ahead of the age of the child. It should not make him in this matter precocious: good judgment must decide what to impart now and what to reserve for the maturer understanding of the child. Up to the age of puberty there is no need of discriminating between the boys and girls in their games. Proper modesty may be safeguarded without sacrificing the value of physical culture. Many mothers make too much haste to impress on the girl her sexual difference. A healthier physique and a healthier moral sense are developed if the children play together in proper environment up to the age of adolescence. Play grounds under proper supervision are a great blessing.

If two normally constituted adults of opposite sexes be isolated from all other human individuals, unless restrained by some higher law, it is probable that they shall follow the mighty sex affinity and develop into lovers.

In the ideal mature man or woman, in whom the laws of nature are developed without moral or physical detriment, the sexual and psychic at-

tractions are blended. The masculine mentality longs for the companionship of the feminine mentality. If only the body of the affinity were the object of the desire, and sensual pleasure the only attraction, it would not be love but the mere brute instinct, and would not outlast its animal gratification.

But as St. Augustine confesses that he fell because he sought not help from God, so the child must seek the help of divine grace. Prayer, the Sacrament of Penance, and Holy Communion are the greatest defences of the citadel of holy purity. The incentives to sins of the flesh in adolescence are very strong: the counteracting considerations must be both hygienic and moral.

Three times in a century the human race is destroyed and renewed. How important therefore the laws which govern its renewal!

We are not advocating therefore that the youth should be left without enlightenment on the sexual life and left "to stumble upon the significance of sex," but we believe this instruction should duly recognize the sacredness of the theme; that the parent is the natural instructor; that in supplementing the office of the parent publicity should be avoided; that proper caution and reverence in this matter should not be decried as over-caution and prudery; that the ethical features should be placed above hygiene; and finally that in the very manner of the imparting of the knowledge the child should be made to realize that he is in the great sanctuary of nature.

Lectures on biology given with scientific precision and with a seriousness which leaves no room for any suggestive surmises prepare the mind properly for further exploration of the branch of the science which deals with the sexual life. Even the general law that the young of the vivipari are born of their parents may be taught early in life by the proper instructor without offending modesty or arousing an unclean imagination. The normal child will take it for granted that there are further facts which are not proper to be given to him now, and he will await the accessions of the years.

In lectures to girls the lecturer must be capable to speak with authority, and should be "as free from self-consciousness as though she were describing the alimentary canal." There should be no "goody-goody" talk about kittens, etc.; nothing that would provoke a smile; but a dignified austere presentation of biological facts, and the lecturer should omit certain matters which may properly only be given individually.

When the great change called puberty is about to be effected then the mother or some one most fitted to take her place must instruct the girl on the functions of womanhood. The full knowledge of the laws of the carnal union of the sexes as a general rule should not be given then. There may be circumstances which compel a full statement of all the sexual facts; and in such case the girl must be equipped with that knowledge which will enable her intelligently to perform the functions which may be demanded of her. In the earlier years of childhood the child's interest in sexual matters is merely casual, and the child loses interest in the matter, if his questions be answered in a general way; provided the answer be not a lie, which will expose him to the ridicule of his companions.

Where the office of the mother, as we have outlined, must be filled by another, the deeper matters of sexual knowledge ought to be given to the

child individually. A lecture comprising all the necessary knowledge of the sexual life can never be given to a group of girls without evil results. It is an invasion of the essential privacy of such matters. Private instruction may be supplemented by very carefully selected literature on the subject, but it is advisable that these be read in the teacher's presence, and questions thence arising answered.

Sexual education should be graduated in accordance with age and mental and moral development. A fully matured man or woman, having passed through the elementary stages of sexual enlightenment as we have outlined, should be capable of using the best literature on this important subject and it is advisable that they should use it.

"*Sex-education in childhood.* Like all the other problems of adolescence discussed in this book, this special educational one is not limited to adolescence, but extends back to earlier years. Hence it is generally agreed that sex-education in its simplest forms should begin in childhood in connection with home life, and progress continuously in home and school through adolescence to adulthood. Twenty-five years ago it was commonly stated by reliable educators that, at about the time of expected puberty, the boy or girl should be instructed in all that they would ever need to know. It was further recommended that the information be given in one concentrated and never-to-be-forgotten lesson. This point of view has changed entirely, and it is now generally agreed among intelligent parents and educators who have studied this special problem that the method of giving sex instruction in one big dose at puberty was inadequate.

"One reason why sex-instruction should not be reserved for puberty is that for many years parents and educators have been accumulating evidence which indicates, first, that it is quite impossible to keep normal young children entirely ignorant of facts in the domain of sex, and, second, that in so far as certain children have been kept innocent, they have been disturbed more or less when the inevitable information came to them with a sudden shock. In the vast majority of cases which have come to the attention of leaders in the sex-education movement young children get more or less unreliable and vulgar information before twelve years of age, and in a great many cases it is known that morals have been corrupted and health ruined beyond repair before fourteen years of age.

"A second reason why concentrated instruction in early adolescence is inadequate is that sex-education should be a combination of character-education and health-instruction, and therefore can not be combined into one or a few lessons. There should be progressive moral guidance and hygienic instruction. This should be the responsibility of the home during the early childhood years. In order to help parents carry on this important work of children, special literature has been prepared and distributed by the American Social Hygiene Association and by the United States Public Health Service.

"The simplest possible instruction for beginning the sex-education of children deals with the life stories or nature-study of common plants and animals. The average child's great curiosity concerning the origin of the individual human can be answered satisfactorily only by nature lessons given in home or school.

"Sex-education in schools. There is much prejudice against sex-education because many people have supposed that it is planned as a new school subject. This is not so. The leaders in social hygiene are opposed to special sex courses. They urge that the facts of life which directly or indirectly concern sex should not be taken from their normal settings and organized into special subjects of study under the names of 'Social Hygiene' or 'Sex Education.' On the contrary, the subject matter of regular courses in biology and social sciences, physical education, hygiene or health education, household arts or home-making, general literature, and psychology, offer many opportunities for presenting the fundamental facts which will be helpful to young people." (Maurice A. Bigelow, Ph. D.)

Great care should be used in the selection of this literature. A mass of well advertised publications pander to the morbid curiosity of the people, and distribute false, pernicious ideas of the sexual life and its important obligations. The guardians of the morals of the people should be able to caution the people against these evil writings, and to direct them to the true sources. Hence a full accurate knowledge of the sexual life is of great value to the pastor of souls. Such knowledge based, as it must be, upon the eternal principles of God's law in nature must heighten the love of the virtue of chaste virginity.

The following Essay by Donald B. Armstrong, M. D., and Eunice B. Armstrong, A. M., merits recognition:

"When you were little, you asked some grown person, 'Where do babies come from?' Probably you were told that a stork, or the doctor brought them. You know now that those were just stories and not really true at all. By this time you have learned something of the wonderful ways in which new life is begun—the growth of the flower; the care of the egg by the bird after she has laid it until the new little bird is ready to come out; the growth of the larger animals, such as cats and horses, inside their mothers' bodies until they are large and strong enough to live in the outside world. You know, too, of the life of the baby within its mother before its birth, and, since this is even more marvelous than any of the other life beginnings, you can understand how very difficult it would be to tell a little child about it.

"You know how hard it would be to explain what you know about electricity to your little brother when he asks you, 'What makes the light?' Yet electricity is a simple thing indeed, compared with the life forces that act to create a new human being.

"The reason for reticence. Electricity you can learn about from books and machines, but life itself you can learn only by living. That is why, until you yourself have married your true mate, and have known the joy of being a father or mother, you cannot really understand the beautiful truths of a baby's creation. As you learn for yourself the big things of life, you will learn, too, why they aren't talked about by fine people as other things are. They are the big sacred realities and too holy for easy discussion. You know that men and women do not tell what they said when they told each other of their love. These things are holy. In the same way, decent people do not talk commonly of other holy, beautiful parts of their life. When you yourself have learned of these holy things, of the splendor of life and love, by your own experience, you will know that no

one could have told you about them. You must learn for yourself—step by step, reverently fitting yourself to take each step as the time comes.

"Preparation for manhood and womanhood. You have now reached the age when you must take your first step into the preparation for manhood and womanhood. Up to this time you have been a child only. Things have been done for you. You have been fed and clothed and told what you should do. Your elders have tried to teach you to act wisely, to think clearly, to acquire strength of mind and body. Just so well as you have learned to do these things, are you now prepared to take your first step away from a child's dependency. For you are entering upon your adolescence, and for success and glory in it, you must depend on yourself. You have much to do that no one can do for you.

"The physical requirements of adolescence. First you must know and fulfill the physical requirements of adolescence. Up to now you have just been accumulating the material with which to build yourself into a man or woman. From babyhood you have been eating and sleeping, working and playing, in order to acquire good building material. Your bones are harder, your muscles stronger; you have learned to eat all kinds of food, and to keep yourself clean. You are no longer a baby, but twelve is rather an unattractive age in boys and girls. You are probably awkward and homely. In other words, you have accumulated good material, but it is in the rough, like piles of stone and lumber from which a beautiful house can be built. Very soon now there will develop in you the new force which can enlarge and beautify this rough material, and which, if rightly used, will make for you the body of a splendid man or woman.

"The new force. Physical changes. This new force is alike in both boys and girls. In both a substance develops which, like the blood, permeates every part of the body and nourishes it in a special way. Due to it, if you take proper care of yourself, many beautiful changes will occur. The boy's voice will grow deeper, his whole body will fill out and become beautiful, with masses of muscles grouped and flowing smoothly under his skin. Hair will develop on many parts of his body; especially will his beard begin to grow. His testicles will alter in size and shape. In the girl, too, changes occur. Her body will lose its long, boyish look and acquire the fine curves and roundedness of a woman. Her breasts will become full and beautiful.

"During these years, which are called the period of puberty, there develops in both boys and girls, at varying ages, a new fluid. Besides this, at more or less regular intervals, special fluids are given off from the body. These discharges are different in the sexes, but each is a manifestation of the new force that is at work within. In the girl, there is a discharge of blood, lasting perhaps a week, which is called *menstruation,* from *mensis,* meaning a month, because it usually takes place once each month. In the boy, the discharge is slight and colorless and occurs irregularly during sleep, usually about once a fortnight, and is called an *emission.*

"Anyone naturally rejoices in this new beauty of body and these signs of coming manhood and womanhood. Beauty comes to everyone who has properly cared for his body. But it is true that for beauty, just as for anything else, a price must be paid. If you are a real person you

want to pay, and pay in full, for everything you get. That is the spirit the world needs in men and women—not the asking for favors nor for easy success.

"The price of success. What then is the price you must pay to become the best sort of man or woman? First, you must expect difficulties and conquer them proudly, and not be frightened by new demands. Next, you must be willing to give up little things in order to gain big ones.

"These changes in muscles and contour can be influenced by effort on your part. The new force has to adjust the body to itself, little by little. For instance, the boy's voice does not change all at once; it is a long time before it is a man's voice. Nor do menstruation or the emissions occur without preparation. There is a period of getting ready which may last two or three years or longer. During this time, particularly in girls, there are apt to be many aches and pains and the body needs special consideration. The strength of all your life depends greatly on how you treat yourself now. Not only are you building your own body now, but you are developing within you the organs which will be used later for the creation of new life.

"Rules of health. Sleep. You must keep in training. Regular hours of sleep in fresh air are absolutely essential.

"Food. You must stick to simple, wholesome food and avoid absolutely tobacco and alcohol in any form. During puberty the skin is often pimply. In order to have clear, fine-textured skin, you must be careful of what you eat now, lest your skin get into permanently bad condition and be to you all your life a reminder of your early lack of self-control.

"Exercise. You must take regular exercise, out of doors, whether it is convenient or not. For instance, it may be easier and quicker to ride everywhere. It is a sign of strength not to wish the easiest way, but rather the best way. Start early enough to walk, learn to walk well, and later you will see the reward in strength and beauty of body.

"Cleanliness. Cleanliness is not only decent, it is necessary for real health. An entire daily bath, of cold, or not very hot water, should form part of your training. Do not keep on wet or damp clothing or shoes.

"The organs of generation. Avoidance of illness. The most important organs in your body are now maturing. These young growing organs are especially liable to be affected by illness and exposure. There exists also the danger of infection, as well as the danger of catching body lice, through the careless use of public toilets. Exactly as you would not use another person's tooth brush or drinking glass, soiled handkerchief, or towel, so you will not allow your body to touch any public toilet. Either cover the seat with paper or stand well away from it.

"In the girl the organs of sex are situated entirely within the body, in the lower part of the abdomen, and are the uterus, the ovaries, and the connecting passages. In the boy, these organs are partly within the lower abdominal cavity and partly outside the body. They are the testes, the penis, and the connecting ducts. Where these parts appear externally, they must be kept scrupulously clean. Boys and girls should cleanse these parts daily, using cotton or the softest cloth, and if any soap, a pure white soap. Cool water should invariably be used. This is an instance of doing

not what you perhaps at first prefer but what is demanded for the welfare of your body.

"Girls, however, must not bathe with cold water during menstruation. Anything that stops or lessens the discharge of blood, such as a cold bath, or wet feet, or anything which increases the flow, such as violent exercise, dancing, or continuous standing, must be avoided during menstruation. Rest at this time is necessary for a girl's own future health and the health of her children, and no false modesty should prevent her from taking proper care of herself. In the boy, likewise, interference with, or increase of the emissions is most unhealthy. These emissions should occur only involuntarily and not from stimulation or roughness in bathing or from rough, tight clothing.

"In regard to the cleansing of these parts, special precautions should be observed. A certain amount of colorless discharge occurs almost unnoticed from these passages and is entirely normal, but it should be washed away once daily, not more or less often. You must remember that these passages are not skin, tough like the covering of your hand, but mucous membrane like the inside of your mouth or of the lining of your eyelid. You do not rub the inside of your eyes when you wash your face, nor handle these other sensitive parts, for they will become inflamed just as your eye does when you get a cinder in it. Such inflammation is difficult to relieve. Another thing to be careful about is the clothing you wear near these parts. Nothing rough, starched, or binding should be worn.

"*Consulting a doctor.* If, although you are gentle in bathing yourself and careful about your clothing, these parts become inflamed and sensitive, you should consult a good physician or the school nurse or doctor. This is rarely necessary, but the condition should not be neglected, and advice or treatment from anyone except a first-class doctor or nurse is usually seriously wrong. A doctor who advertises or guarantees cures is not a good doctor.

"*Clothing.* Boys and girls should consider their clothing now. This is one of the matters in which it is necessary to be strong enough to give up a little thing for the sake of a big one. Just as you will, during your puberty, have to prefer nine hours of sleep to any party or theatre, so you must prefer wise clothing to any unhealthy "style." Girls show less sense than boys about this. Yet clothing which will permit a girl's uterus to grow freely is of the utmost importance to her for her whole life. A girl who wishes to become a beautiful woman and a normal mother will wear only such corsets as do not in any way restrict her movements or growth. She will not pull her body out of shape with tight garters. She will stand erect, with shoulders square and chest out. She will not copy the absurd postures of some older girls whose bodies are too weak to be held normally. She will not wear shoes with small or high heels which tilt her body out of its natural position. Girls should see to it, and boys also, that the heels of their shoes are kept level and not worn down. Wearing rubber heels is a help in this.

"*Tobacco.* If girls are often foolish about their clothing, boys are even more foolish about tobacco. Why any boy who wants to develop strength of mind, muscle, and nerve and who is trying to keep himself in best condition, will run the risk of spoiling all his efforts by the use of

tobacco before he has his growth, is hard to understand. Perhaps it is because, like the girl who wears foolish clothing, he cannot see the bad effects in the beginning and he has not sense enough to look ahead.

"*Constipation.* Another important thing is to avoid constipation. Constipation may cause much pain in menstruation, for the accumulation of feces in the intestines pushes the uterus out of place. Constipation in boys tends to produce abnormal conditions which may bring about serious results later. At least one easy movement of the bowels each day is necessary and can be brought about by regular habits, vigorous exercise, and a diet containing not too much meat, plenty of water, fruit, and coarse food, such as oatmeal, etc. If in spite of this routine, constipation occurs, a good doctor should be seen. Nothing is worse than to get the habit of taking medicine, candy cathartics, etc., to bring about bowel movements.

"*The penalty for breaking the rules of health. Nervousness.* These demands of your sexual development are simple everyday matters. But if you fulfill these demands, if you keep in training, you will be spared much of the 'nervousness' which so often appears in puberty. The body cannot be healthy if any part of it is ill. The nerves are the connecting wires between the brain and all parts of the body. They carry the news of weakness. Nervousness shows itself in irritability and depression. The boy who at this time wants to 'pick a fight' with everyone, who is 'too ugly tempered to have around,' who has 'spells of the blues,' who 'can't keep at anything,' and who feels that 'people don't treat him fairly,' is the boy who is not treating his body as it should be treated, and his nerves are carrying the bad news to every part of him. This is just as true of the girl of the same sort; the one who cries too easily, laughs too loudly, 'gets all tired out at nothing,' can't sleep well, is jealous and envious, and can't keep her friends. Her body is out of tune, and the chances are that it is her own fault.

"If you make up your mind to give your body the care it needs, and are patient, realizing that proper development means a long, slow fight, you will make each day glad with the joy of health, you will be fit for work and play, and ready to become the sort of man or woman that the world most needs.

"The care of your body is not your only need. All this physical rightness is important. Without a good physical foundation, you cannot build yourself into a splendid all-around man or woman. Nevertheless, physical rightness is the least important thing which you have to learn in order to achieve real manhood or womanhood.

"Growing animals have many of the same physical needs that you have; good food, sufficient sleep, and suitable exercise. Without these, animals cannot mature properly any more than can you. But you are not living according to the rules of health simply in order to grow into a healthy animal. Instead, you are learning to be a healthy animal, merely in order to have the proper physical start as a man or woman."

Very early in life the little girl may be taught that there are certain private things that are only talked of with mother. She will be taught that children who talk of these things publicly are not proper companions; instinctively the child will shun them. She will be taught never to do anything that she would be ashamed to have mother know. She will be

taught never to allow a boy to maul her or pinch her, or kiss her, even in fun.

It is always understood in these pages that what is laid down as the Mother's sacred duty, in the defect of a mother, passes to the one who takes her place.

While the exemplary woman will develop the divine charm of modesty; she will control the sexual impulse by a restraint stronger than death, but she will not consider that sexual impulse is degrading or in any way sinful. The sexual functions are of the highest order: reproduction is one of the great primal blessings of the Creator, and in reproduction the healthy vigor of the woman's reproductive organs is an absolute factor. The great importance of their functions in the life of humanity is proof of the necessity of the proper control of these functions.

This desire for reproduction is early observed in the little girl. The love that she bestows on her dolls, and the joy she feels in playing the little mother is but a manifestation of woman's maternal instinct, which should grow stronger with her development. At puberty the pure girl will rarely feel the sexual emotion centered in the sexual organs. Her dreams are of love, of motherhood; her sexual power is passive and latent.

Even in women who have experienced sexual intercourse, and whose subsequent state of life deprives them of this union, sexual excitement in unconscious cerebration is infrequent, and may be entirely absent.

If the courtship be pure the wife comes to her husband's arms with latent sexual emotion, which must be aroused by the caresses of the man she loves.

Modesty is controlled by the consciousness of decency and propriety. The famous statue of Venus shielding her breast and vulva is an emblem of woman's instinctive modesty. The conventions of society are a factor in modesty only in as much as their disregard creates in the public mind the persuasion that the woman is wanting in that virtue that it is natural for a woman to prize.

Modesty suffers a shock when a woman must submit to the operation of a physician in disease or confinement, but the consciousness that it is not contrary to the moral law or any propriety restores the equilibrium. Many women will however suffer long, even sometimes for life, rather than endure the necessary care of the physician. So highly does the moral code of the Church value the virtue of modesty that it allows the woman to sacrifice her life to natural causes, if she prefer, rather than submit to the operation of the surgeon.

In marriage the wife still feels the restraint of modesty.

This restraint endures always in the true woman, but it hinders in no way the offices of conjugal love. The complete confidence which the wife feels in her beloved, and the consciousness of the enduring character of his love, and the holiness of the act overcome the delicate sentiment of modesty in so far as that one being is concerned, and the joy of love is heightened by the conflict of the two contending sentiments.

Coitus is not the only bond in the ideal marriage. There are also "the endearing elegance of female friendship and the happy commerce of domestic tenderness." Strong friendship and loving association exist inde-

pendently of all sexual influence. A fortiori they must exist in that beautiful union which Christ has raised to the dignity of a sacrament.

The sexual mechanism in woman is more complex than it is in man. Man has one primary sexual focus: woman has three, the clitoris, the vaginal passage, and the nipples of the breasts.

The ovaries are the "regulators of the sexual impulse." (Kisch). They cause the sexual impulse: the clitoris is the chief seat of sexual sensibility.

At puberty the normal boy becomes decidedly masculine; the girl, decidedly feminine, and both acquire a new consciousness, the consciousness of the great vital ruling passion, the sexual power; both are drawn by a pleasurable affinity to each other. That affinity is eternally embodied in nature by the Creator's law:

"Therefore shall a man leave his father and his mother, and shall cleave unto his wife: and they shall be one flesh." (Gen. II, 24)

The man's masculine mentality finds the girl's feminine mentality its charming counterpart.

The instinct of modesty and the law of God demand that sex and its functions should be considered sacred, that the virginal sense of shame keep eternal vigilance over the sanctuary of our bodies, but the highest degree of chastity does not demand that ignorant prudery that regards the sexual attribute and its functions as something in itself evil. The generative power is the glory of man and of woman. That it should be well-developed and healthy is a great blessing. It is a participation in that blessing bestowed on man before the fall.

"And God blessed them: and God said unto them, Be fruitful and multiply and fill the earth; and subdue it." (Gen. I, 28).

This healthy concept of the sexual power is compatible with that everlasting law of chaste celibacy, with chaste marriage, and with that higher degree of the same law, the renunciation of the use of the sexual powers in the holy state of perpetual chastity.

The eunuchs "who have made themselves eunuchs for the kingdom of Heaven" would feel nature's instinctive depression of mind if afflicted with sexual incompetence.

Purity is the control of sexual power in accordance with the moral law. In this control women, as a rule, are more practised than men. The social code fosters this double standard. Man may be "a lion" among men and women by reason of that which if revealed in women, would ostracise her. Her natural feelings are also finer; and finally the necessity of guarding her physical safety compels her restraint. The organic functions of the female compel her to limit seasons of copulation. Woman therefore develops the natural instinct of self-preservation; and thus she is ever on the defensive. Man responds to his active part in reproduction by obliging a natural impulse and *receiving* something: woman fulfills her part by surrendering her defense, and *giving* herself.

The male author of bastardy often escapes all human punishment: at most, his penalty is light; but the woman is crushed, and her name blighted forever.

Through the universal affinity of the sexes nature issues her first invitation to preserve the species. The eternal feminine attracts the eternal masculine, and vice versa.

"There's peril in the rustling of her dress" (Paolo and Francesca by Stephen Phillips).

Sexual dreams are commonly experienced by men. They should in no wise disturb the conscience. It is the rule for the young man, even the perfectly continent young man, to have sexual excitement and emissions of the semen during sleep. It is an exception for the chaste maiden to have sexual dreams; and if, by exception, it occur it will be vague and as a general rule, no orgasm will occur.

"So far as I have been able to ascertain, there seem to be, generally speaking, certain differences in the manifestations of auto-erotism during sleep in men and women which I believe to be not without psychological significance. In men the phenomenon is fairly simple; it usually appears about puberty, continues at intervals of varying duration during sexual life provided the individual is living chastely, and is generally, though not always, accompanied by erotic dreams which lead up to the climax, its occurrence being, to some extent, influenced by a variety of circumstances: physical, mental, or emotional excitement, alcohol taken before retiring, position in bed (as lying on the back), the state of the bladder, sometimes the mere fact of being in a strange bed, and to some extent apparently by the existence of monthly and yearly rhythms. On the whole, it is a fairly definite and regular phenomenon which usually leaves little conscious trace on awaking, beyond probably some sense of fatigue and, occasionally, a headache. In women, however, the phenomena of auto-erotism during sleep seem to be much more irregular, varied, and diffused. So far as I have been able to make inquiries, it is the exception rather than the rule for girls to experience definitely erotic dreams about the period of puberty or adolescence. Auto-erotic phenomena during sleep in women who have never experienced the orgasm when awake are usually of a very vague kind; while it is the rule in a chaste youth for the orgasm thus to manifest itself, it is the exception in a chaste girl. It is not, as a rule, until the orgasm has been definitely produced in the waking state—under whatever conditions it may have been produced—that it begins to occur during sleep, and even in a strongly sexual woman living a repressed life it is often comparatively infrequent. Thus, a young medical woman who endeavors to deal strenuously with her physical sexual emotions writes: 'I sleep soundly, and do not dream at all. Occasionally, but very rarely, I have had sensations which awakened me suddenly. They can scarcely be called dreams, for they are mere impulses, nothing connected or coherent, yet prompted, I know, by sexual feeling. This is probably an experience common to all.' Another lady (with a restrained psycho-sexual tendency to be attracted to both sexes), states that her first sexual sensations with orgasm were felt in dreams at the age of 16, but these dreams, which she has now forgotten, were not agreeable and not erotic; two or three years later spontaneous orgasm began to occur occasionally when awake, and after this, orgasm took place regularly once or twice a week in sleep, but still without erotic dreams; she merely dreamt that the orgasm was occurring and awoke as it took place.

"It is possible that to the comparative rarity in chaste women of complete orgasm during sleep, we may in part attribute the violence with which repressed sexual emotion in women often manifests itself. There is thus a difference here between men and women which is of some significance when we are considering the natural satisfaction of the sexual impulse in chaste women.

"In women, who have been accustomed to sexual intercourse, erotic dreams of fully developed character occur, with complete orgasm and accompanying relief—as may occasionally be the case in women who are not acquainted with actual intercourse; some women, however, even when familiar with actual coitus, find that sexual dreams, though accompanied by emissions, are only the symptoms of desire and do not produce actual relief.

"Some interest attaches to cases in which young women, even girls at puberty, experience dreams of erotic character, or at all events dream concerning coitus or men in erection, although they profess, and almost certainly with truth, to be quite ignorant of sexual phenomena. Several such dreams of remarkable character have been communicated to me. One can imagine that the psychologists of some schools would see in these dreams the spontaneous eruption of the expression of the race. I am inclined to regard them as forgotten memories, such as we know to occur sometimes in sleep. The child has somehow seen or heard of sexual phenomena and felt no interest, and the memory may subsequently be aroused in sleep, under the stimulation of new-born sexual sensations." (Havelock Ellis)

Rohleder believes that auto-erotic orgasm is impossible in a real virgin. Adler denies that women have erotic dreams. Eulenburg regards such dreams as the result of masturbation.

Desire is awakened in man by the beauty, touch, voice, hair, and breath of woman. Even the sense of smell has the power of awakening sexual passion.

Fleiss endeavours to prove that on the interior turbinate bones there exist certain "genital areas", which, under sexual excitement, swell.

This theory is not proven, but it is certain that the exhalations of the body, especially of the sexual parts stimulate sexual desire. This may be explained on a purely psychic basis. The sense of smell conveys to the mind the realization of sex, and that reacts through the mind on the erogenous zones.

Perfumes used to conceal the odors of the body excite erotic desires, because the mind realizes that they manifest the presence of what they are used to conceal.

Some sexologists assert that musk and other perfumes exert a direct physical influence to excite libido, but this is not proven.

"The individual variations in the sexual instinct are enormous, and may be said to vary from zero to an intense and perpetual excitation called satyriasis. By sexual power is understood the faculty of accomplishing coitus. This power, in the first place, requires strong and complete erections, as well as the faculty of following them by frequent seminal ejaculations, without being precipitate." (Forel)

Dr. Forel here treats of male sexual power. Sexual desire sometimes exists in the female in an uncontrollable degree: it is called nymphomania.

"Satyriasis is defined as excessive venereal impulse in the male. It is the exact counterpart of nymphomania, which is the same condition in the female.

"The excessive impulse must be pathological in order to constitute satyriasis. The fact that a married man (egged on perhaps by his wife) has the desire and the ability to have intercourse with his wife very frequently, does not constitute the disease. The amount of sexual intercourse a man can have under suitable conditions varies *normally* within very wide limits, and simply excessive coitus does not constitute satyriasis. In those afflicted, there exists an abnormal, terrible desire or impulse to have sexual intercourse under any circumstances or conditions, irrespective of the age of the female or other considerations of decency or decorum. As White and Martin put it, 'the sexual desire is so overpowering that its gratification becomes the one dominant thought and purpose of the patient's life.'

"*Etiology.*—The etiology is not at all clear, and various causes given by some authors are vigorously denied by others. This is mainly due to the different conceptions of the disease itself held by different authorities. Alcoholism and pulmonary phthisis are considered by some as etiological factors. Both continence and masturbation are supposed by some to lead to it, but, from a large experience with both of these latter conditions, I cannot at all subscribe to this view. I have never seen either a case of masturbation or of continence develop into satyriasis. I have also read the reports of those cases of supposed satyriasis following continence, but, from an impartial reading, can say that the author had not the correct conception of the disease. One example might be briefly given here. A young unmarried clergyman had for many years been troubled with sexual thoughts which he, however, successfully repressed. Finally his sexual feelings so overpowered him that he became almost delirious and was cured only by regular sexual intercourse. This case has been frequently cited as satyriasis due to continence. To the unprejudiced mind, however, it is clear that this was not at all a condition of satyriasis, but simply an unusually powerful sexual desire. The very fact that the patient was cured by normal sexual intercourse shows that there was not even a tendency to the disease. As regards masturbation being a cause, we must bear in mind that the mere fact that a victim of satyriasis often resorts to masturbation, if he is unable to satisfy his desire in any other way, by no means proves that masturbation is the cause of the disease.

"*Pathology.*—Opinion is divided, among those who have studied this condition, as to whether it is a disease *per se* or only a symptom of some form of psychosis. Thus Parke says that both satyriasis and nymphomania are more frequently symptomatic of the graver psychosis dependent on derangement of cerebral and spinal functions. On the other hand, Wulffen considers it a pathological condition of sexual hyperesthesia. According to him, both satyriasis and nymphomania are not perversions, but simply pathological states. The pathological seat, in his opinion, is to be found in the genitals themselves and the disease is neither hereditary nor are those afflicted degenerates. Krafft-Ebing considers it a state of physical hyperesthesia, with a powerful participation of the sexual spheres.

"My own opinion is, that in the present state of our knowledge (which is by no means complete) it is best to consider satyriasis as a clinical entity

just as we consider impotence, or masturbation; that is, a condition which may be due to either local, cerebral or psychic causes. This conception does not conflict with the opinion that the disease is merely a symptom of some graver psychosis (psychic form), nor with a case which has come under my own observation, and which is presently to be reported, where the disease was due to the irritation of an exceedingly large and inflamed verumontanum, which was seen through the posterior endoscope, and in which the reduction of the verumontanum by the application of powerful caustics eventually effected a cure. The view just expressed is merely tentative, as it appears to be the only one to harmonize all the clinical facts. It may, however, have to be modified or entirely altered as soon as more light is thrown upon the pathology than we know at present.

"It should be distinctly remembered, in considering the symptoms and history of some of these cases, that satyriasis often accompanies severe forms of psychoses, and is to be found in connection with, and forms part of, some forms of insanity.

"*Symptoms.*—The person afflicted with satyriasis strives to obtain coitus at any price. If he cannot obtain it in the ordinary way, he sometimes resorts to masturbation or sodomy. Rape is not uncommon. Wulffen reports a case of an old man of 70, who married a young girl with whom he had coitus 10, 15 and 20 times in twenty-four hours, and actually kept this up for a period of three months. Krafft-Ebing reports the case of a middle-aged man who left the train, ran into a small village, and raped an old woman of 70, whom he found alone in her home. The case which came under my own observation, and above referred to, was that of a poor laborer who spent all his wages to obtain connection, and who told me that he would have had connection several times a day if he had had the price. Every time he saw a female he would be seized with an inordinate desire, which he found it most difficult to restrain.

"The entire psyche of these patients is made up of sexuality which colors their entire world. Every thing they see or hear brings thoughts on sexual matters. The phantasy produces sexual pictures, and in very bad cases there is an actual confusion of ideas and hallucinatory delirium. In most cases of the disease, the genital organs are in a state of continual turgescence. Many of those afflicted eventually find their way into the criminal courts. 'The sexual impulse,' says Krafft-Ebing, 'may become so strong as to completely demand relief in the corresponding sexual act. In acute and severe cases, morals and will-power entirely lose their controlling influence, while in chronic and milder cases restraint is still possible to some degree. At the acme of paroxysm, hallucinations, delirium and benumbed consciousness appear, and often continue during a prolonged period.' These latter symptoms, just mentioned, really belong more to the grave psychoses than to satyriasis proper. He also quotes the case of a man in whom the sexual impulse became so powerful that if he were absent from his wife even for a short time, he became indifferent as to whether woman, man, or animal satisfied his desire.

"There is also a form of chronic satyriasis which is described by Krafft-Ebing as follows: 'To this class belong men who suffer from sexual neurasthenia as a result of *abusus* veneris, and particularly of masturbation, and who at the same time possess intense libido sexualis. Their

imagination, just as in acute cases, is intensely excited, their mind is full of obscene pictures, so that even the most sublime things they contemplate are tainted with lustful images and suggestions. All the thoughts and desires of such men are concentrated on sexuality, and, as the flesh is weak, they gradually acquire the grossest perversions of the sexual act, under the stimulus of their imagination.'

"*Diagnosis.*—The diagnosis is to be made from a careful study of the history of each case. It is especially important to make the correct diagnosis and differential diagnosis in criminal cases, so as to fix the responsibility in cases of rape or other criminal assaults.

"*Prognosis.*—In the absence of a distinct pathological condition the prognosis as to cure is bad. Many of the milder cases, however, seem to be able to control themselves to a certain degree, often even to a very marked degree, and they may go through life without getting themselves into trouble.

"*Treatment.*—In each and every case, it is well to investigate the condition of the posterior urethra. In the case reported to me above, I found a definite pathological condition, the removal of which cured the disease. The pathological condition in that particular case was an extremely enlarged and congested verumontantum, the largest I had ever seen, and the treatment consisted in direct application of very strong silver nitrate to the parts through the Wossidlo-Goldsmith posterior urethroscope. Why a diseased verumontantum should have caused satyriasis in that particular case, and why in hundreds of other cases which I have seen practically the same condition in the posterior urethra should have had no such effect, is one of the unsolved mysteries of sexual neuroses. Both Forel and v. Schrenck-Notzing report cases relieved, and in some cases cured, by the use of hypnotism. In these they considered masturbation to be the underlying cause.

"Even though we cannot get at the etiological factors, or remove the underlying pathological condition (especially in the psychic and cerebral forms), we must not neglect treatment nevertheless. We must positively interdict alcoholics, as well as coffee and tea. We must also remove any local genital condition as well as anything that psychically stimulates the sexual centers. The reason for this treatment is as follows: There are very many mild cases of satyriasis, in which the patient under ordinary circumstances is quite able to control himself, but if drunk, or under additional outside sexual stimulation, is entirely unable to do so, and gets himself into serious trouble. The more severe cases ought to be placed in an institution, for the protection of society as well as for their own protection, and we ought not to wait until some unfortunate, uncontrollable impulse brings them into the criminal courts." (Max Hühner)

In my own experience I have found masturbation to be the cause of satyriasis in every case. I found one man of seventy-five years who often assaulted little boys.

Nymphomania is the corresponding uncontrollable sexual desire in woman.

I found a case of a young girl who became a nymphomaniac at the age of twelve. The mother discovered her in the act of abusing herself while pumping water at the well. It seems to have been an atavistic trait.

Her paternal grandfather, though the father of fourteen children, repeatedly attempted masturbation while sitting at the stove in the family circle.

The nymphomaniac was married at fourteen to a young farmer. She bore him fifteen children: her frequent pregnancies enabled her to control her sexual power. Her children were normal and healthy save one epileptic.

The woman always remained abnormally sexual, but by the aid of religion and her motherhood she controlled her desires. I have never known a case of recovery of a barren nymphomaniac.

The eternal ethical law of God demands of man to retain control of his sexual powers. This can not be done without a vigorous combat. The flesh is a rebel. The brute beasts have their seasons for copulation; at other times they have no instinct for the act. Man is not regulated by rutting seasons; he may at all times comply with the sexual prompting. His reason is given him to control his desire. The first principle in control is to keep the mind from the influence of unlawful sexual thoughts. Physicians believe that there is an unknown area of the brain, which, when stimulated, causes sexual passion. Be that as it may, we know how quickly, under the powerful stimulus of erotic concepts, the genitalia become congested. Self-control grows stronger by proper education: it loses its power by evil habits.

Nature proceeds blindly: it is the empire of the will which regulates the sexual inclination. The cultured and controlled sexual mentality not only represses what is unlawful, but adds an intense pleasurable impetus to what is lawful. Moral purity consists not in the absence of sexual emotion: such absence is an abnormal state.

The sexual sense should be allowed to develop naturally, and should be refined without unnatural repression. Vigorous healthy sexuality is consistent with perfect chastity of mind and body. The young man and the young woman should be taught to regard their bodies as sacred temples of the Holy Ghost, and to regard the sexual functions as most sacred and beautiful. Man should glory in his virility, and woman in her potential motherhood, even though they contemplate the renunciation of the use of the procreating powers for a higher state of life.

From personal experience I believe that if a certain youth were convinced that the development and functioning of his sexual organs was not evil he would have been saved from *amentia precox,* which I fear now is incurable. There is a close, perhaps mysterious, connection between the mind and the sexual organs, and therefore unhealthy mental states will unfavorably influence sexual life.

The proper development of girls is often retarded and even impaired by an unnatural repression and fear of healthy sexual functions.

On the other hand, anything that weakens the innate feeling of shame in the child is a great evil. This feeling of shame is one of the greatest defenders of morality in the whole natural order. Better that a few errors through excessive innocence should have place than that the principles of the modern theorists on sex education should tear away the veil of modesty's sanctuary. In sexual matters it is better that the child should know too little than too much. Some knowledge of these matters the child must have for self-protection and especially as a safeguard against the evil com-

munications of corrupt associates; but rarely outside of the parent or guardian, the conscientious physician, and the confessor, can one be found apt to impart this knowledge. It has been well said that "it is the privilege and duty of parents to give their children their first information about sex and parenthood."

The modern materialistic education is apt to place health ahead of morality as the aim of sex instruction. Modern views on Eugenics are often contrary to true ethics. Materialistic teachers have a false idea of Catholic asceticism. Thus Maurice A. Bigelow of Columbia University writes:

"But control does not mean asceticism, which aims at complete subjugation of sexual instincts and would annihilate them if that were biologically possible. This pessimistic interpretation probably has had not a little responsibility for the widely accepted and depressing view that sex is a necessary but regrettable fact of human life." The only asceticism widely accepted is that of the Catholic Church, which does not hold that the sexual processes are inherently shameful or sinful. The Catholic Church unequivocally condemns Origen, the Encratites, Tatian, and Tertullian, and other false ascetics.

The asceticism of the Catholic Church in the asceticism of Christ and of St. Paul, which invests both celibacy and marriage with their respective degree of sanctity. The religious celibacy of the Catholic Church is not in favor with the spirit of the world. "Now the natural (psychikos) man receiveth not the things of the spirit of God: for they are foolishness unto him; and he cannot know them because they are spiritually discerned." (I. Cor. II. 14) There have been some extremists in the Catholic Church: the great value placed on chastity may have in some cases reacted on the rights of sexual life; but these men never established the moral code of the Catholic Church.

The Moral Theology of the Catholic Church is the only system of laws which can govern man's moral life. In it we find no excess and no defect. The law of God and the liberty of man are there set forth with infallible truth and fine discernment, and the only way to save the world is to apply these eternal principles of right to the human race.

It is admitted by all that some instruction on the sexual life must be given to the child. Otherwise as the sexual processes begin to awaken the child will be impelled by a morbid curiosity to know sexual facts. The unsophisticated boy will pick up in the street knowledge of his sexual life, distorted and full of vicious incentives, and clothed in an obscene vocabulary.

"The fundamental instincts. Since we must use the phrase 'sexual instinct' frequently in the following pages, it is perhaps well to turn aside to get a mutual understanding as to what is included in 'sexual instinct' considered as a fundamental tendency of human life.

"Many modern psychologists, who base their scientific theories and principles on observations regarding actual behavior of living things, analyze all human instinctive actions, which in the scientific sense are inborn or inherited, into two groups, one of which concerns the preservation of the individual (ego- or self-instincts) and the other concerning the preservation of the race (sexual or racial instincts).

"The self-preservative instinct first begins to assert itself during the first days of life, when by crying the child leads its caretakers to provide for its bodily comfort. This instinctive demand for self-preservation goes on and on, and if, by expressing their demands by crying and other actions, children learn that they can get most of their desires satisfied by the mother or by others, it not infrequently happens that in adolescent years the result is extreme selfishness and lack of reasonable adaptation to the rights of other people. Of course, instinctive selfishness may be expected to be more or less prominent throughout childhood and adolescence, except as it is restrained and adapted by experience contacts with other people and by direct teaching regarding the rights of other people.

"The race-preservative, racial, or reproductive instincts (including both the primary sexual or mating instinct and the parental instincts) often appear to be foreshadowed in childhood, but are capable of their full development in early adolescence. The first purpose of the primary sexual instinct is reproduction or perpetuation of the species, and this is necessary because individual human life is limited. Modern philosophical biology has in scientific language emphasized the significance of Hamlet's remark: 'Tis common; all that lives must die.' The individual has his day on the stage of life and the reproductive or primary sexual instinct provides his descendants or successors. It is evident that in its purpose the reproductive instinct is not selfish, because it is a creative function of the individual in the interest of the race. However, to make sure of race preservation, Nature has attached a pleasure value or motive, both physical and emotional, to the sexual function; and consequently a basis for selfish interest has entered. And, like the ego-instinct, the reproductive instinct may remain at its lowest animal levels and serve to give only purely selfish and physical satisfaction, or it may develop individually into constructive tendencies relating to the family and still larger groups.

"These two groups of instincts and their resultant social traditions and motives for conduct, acting independently or together, are the foundation of all conduct. The problems of character-building in childhood are chiefly centered around mastery of the self-instincts in the interest of unselfish and social adjustments to other persons; but in adolescence, the task of those who would guide young people into the final make-up of their personality is complicated by the fact that the self-instincts are still far from a satisfactory adaptation, and there is suddenly awakened into full activity the racial instincts with possibilities that are naturally selfish unless directed by educational and social forces. In short, as will be discussed in the chapter on sex education, the problem of control of the sex instinct in adolescent years is one of counteracting or replacing the purely selfish motives.

"Looking at adolescence simply with reference to its relation to the adjustment of the fundamental instincts to character-building of the individual, there is not a decidedly new group of problems appearing with the 'teens,' but a continuation in a larger measure of the social adjustment of the inborn selfish tendencies that begin in earliest childhood. In other words, the development of personality or character-building in adolescence or in earlier life means, in the last analysis, the social adjustment of the selfish motives of the self-instinct and of the racial instincts. Fortunately,

our experience with most young people compels us to be optimistic as to the usual outcome in the struggle of the selfish forces under educational attack.

"Sexual tendencies in preadolescence. Chiefly as a result of the attitude and direct teaching of parents and other adults, and certainly not at all as inherited instinct, the average child in the years between four and fourteen develops feelings of shame, and even disgust, with regard to things sexual and excretory. The direct purpose of the child's elders who attempt to develop these feelings is the control of premature sexual instincts, especially self-stimulation (masturbation), to which children of this period are often inclined. Such inclination is probably not so much due to instinctive development as to curiosity and environmental influences. Physiologically considered, there is no reason why a normally developing child who is protected against external stimuli should exhibit sexual interest until approaching puberty, when growth of the sex glands (ovaries and testes) and their secretion of the sexual hormones may be expected to initiate the sexual instinct. Normal young animals, for example, calves and colts, show no signs of sexual interests until after months of growth when the sexual glands suddenly begin activity and start the animal's puberty. However, it is well known to observers of animal behavior that external stimuli, such as local genital irritation, often causes premature sexual excitement in many of the common domesticated animals. It is good biological science to believe that young humans in childhood would develop without evidence of sexual interests, as do unstimulated young animals, if we could control external influences absolutely. This we can not do. We can not arrange to let the young human simply live and grow from birth to sexual maturity as does the young animal, free from external influences which tend to develop sexual interests before the physiological changes that prepare for puberty. This is so because the child is an intelligent being, and hence curiosity and memory associations that lead into the domain of sex pile up their influence from the moment of that first curiosity expressed in the age-old question, 'Where did the baby come from?'

"Unfortunately, the first indication of curiosity is usually met either with a sharp rebuff, that is sure to turn the child to other sources of information, or with explanations that credit the doctor or the stork with the addition to the family. In either case, curiosity concerning things sexual is sure to be stimulated.

"It is now generally understood by psychologists that with regard to a moral sense in the general meaning of that term, the young child is unmoral or amoral, not immoral; and unsocial or associal, not antisocial. For example, young children are naturally selfish until by repeated contacts and conflicts with other children and older people they may learn mutual adjustment with and recognition of the rights and desires of others. They may even be cured, from our adult view-point, until they learn sympathy with other living things. In short, moral and social qualities are made, not inborn or inherited. A similar interpretation should be placed by the child's elders on any brief outbreak of sexual tendencies in the preadolescent years. In fairness, as well as in helpfulness, we must remember that character is in the making, that standards of sexual conduct are unformed, and that premature sexual tendencies are probably due to the stimulation

resulting from unhygienic conditions or from an insistent curiosity more or less unsatisfied by accurate knowledge from older people, and intensified by contact with other children who are likewise trying to grasp the riddle of themselves and of the world outside their physical selves.

"With such an understanding of the child's possible relation to its coming sexual development should those who deal with children approach continuously the problem of moral and social teaching whenever there appear slight indications of sexual tendencies in preadolescent years. An opposite policy, with an attitude of absolute taboo or of moral condemnation, has ruined many children, especially boys, caught in some unmoral tendency by parents or teachers who did not understand the modern physiology and psychology of adolescence and preadolescence.

"The awakening of the reproductive function in puberty. Embryology has shown that as early as in the third month of prenatal life the reproductive organs of the human embryo have developed so far that the sex can be easily distinguished. It is now accepted by biologists that sex is determined at the moment of fertilization when the sperm-cell enters the egg and a new individual life begins. However, it can not be seen in the first six weeks of development whether the egg has been entered and fertilized by a male-producing or by a female-producing sperm-cell. In embryos about 45 to 50 days old, it is possible to determine with a microscope whether ovaries or spermaries are forming.

"In the first six months of embryonic life the sex organs develop into the form in which they appear at birth. From this time to the last of childhood years the external organs remain in the infantile condition. Microscopic researches have shown that the sex cells in ovaries and spermaries, from which in adolescence egg-cells and sperm-cells will be formed, are dormant and quiescent from early prenatal life to near the adolescent period. The beginning of ovulation, that is, the maturing of the first egg-cell, about the time of the first menstrual flow, and the parallel beginning in boys of sperm-cell formation (spermatogenesis) about the time of the first sign of puberty, are undisputed evidences of the awakening of the reproductive system. This has a long dormancy extending from the prenatal months through childhood years, and meanwhile all other organs of the body are growing gradually towards the adult condition.

"With the awakening and rapid growth of the essential reproductive organs, the ovaries and spermaries, at the dawn of puberty, many correlated changes occur, as follows: The external genitals of both sexes begin to grow rapidly, and their pubescence develops. At the same time the 'secondary sexual characters' begin to appear. Some of these are: The general form of body characteristic of men and women develops within a few years; hair grows on the face (especially the beard of males) and in the armpits of both sexes; the vocal apparatus changes and the result is especially noticeable in boys whose voices change from soprano to tenor or baritone, often very suddenly. In this connection it is interesting to note, as proof that voice changes are secondary to the sexual development of puberty, that the eunuched choir-boys of medieval cathedrals retained their soprano voices, altho in all respects, except sexual, they grew adult-size bodies with childlike, rather than manlike, appearance. The famous

Neapolitan male soprano, Farinelli (1705-1782), was a eunuch whose voice has never been equaled by any other soprano, male or female.

"Coincident with the awakening of the primary sexual organs (the ovaries and spermaries) and the rapid preparation for reproduction, the sexual or mating instinct becomes active and, in one form or another, tends to exert an enormous influence on the physical and mental life of youth during the pubertal period and thereafter. As pointed out in the preceding chapter, there may be some evidence of sexual interest in some children long before puberty, even in infancy, but these are largely, and perhaps solely, the result of curiosity, self-stimulation (masturbation), sexual play, and unhygienic conditions. There is no good biological reason for regarding sexual interests of some children before adolescence as a real awakening of the sexual instinct, which in the form of new emotions and new physiological conditions begins its irresistible influence at the dawn of puberty. Children are not sexless human beings; but in numerous cases there is no sign that sexuality tends to awaken before puberty.

"Of course these statements are not at all acceptable from the viewpoint of certain groups of writers to whom the sexual instinct is the all-pervading and dominating note in human life from birth to old age, and who persuade themselves, and some others, that many little acts of behavior in childhood that to most scientific people seem quite non-sexual are subconscious workings of the sexual instinct. Such assumptions would be interesting if somebody could prove their truth, but in the present shortage of supporting facts there seems to be no good reason for taking such extreme theories too seriously.

"It is not surprizing that the sensory part of the sexual system should react to stimuli even in earliest childhood. The child is born with a complete set of nerves and nerve-endings in the sexual as well as in all other organs. It might, therefore, be expected that, given appropriate mechanical stimuli, there will follow sensory reaction. The mechanism for more or less complete sexual activity is present in preadolescent years; and, as is well known, habitual demand for frequent satisfaction by natural or unnatural means may develop before puberty in some children, especially boys. However, it is to the point to note that boys who have passed through a period of such premature stimulation are perfectly conscious that at puberty a powerful wave of sexual urge comes upon them because of mysterious changes within themselves. The fact is that with the dawn of adolescence the genital part of the nervous system comes under the control of sexual instinct, which is in some way the resultant of the reproductive hormones from the sex glands. Thus there is evidence of a true awakening of sexual instinct coincident with awakening of the long dormant reproductive mechanism.

"Concluding the discussion of this topic, the author asserts that nothing is gained and much confusion results if we attribute directly to the sexual instinct any evidence of sexual excitability in childhood. Rather do the facts of comparative physiology and psychology suggest that such premature excitability, when present, is due to external influences or stimuli and not to the internal urge of an instinctive mechanism. This, so far as we know the facts of animal and human life, begins its well-defined influ-

ence as a mating instinct when the reproductive system is ready for its activity.

"*Differences between the sexes.* The sexual instinct forces itself to the attention of all normal boys in early adolescence as a conscious demand or need for sexual activity. The pubertal boy soon realizes the nature, source, and desirability of sexual sensations; this is natural and automatic and not the result of any preadolescent sexual interests. On the other hand, it now seems probable that a very high percentage, and perhaps the majority, of pubertal girls do not parallel the normal awakening of boys and are not conscious of sexual desires as such. This has long been the opinion of numerous women with medical or scientific training, and it has recently been supported by studies made, by the secret questionary method, concerning the sex life of one thousand married and one thousand unmarried women, conducted under the guidance of Dr. Katherine Bement Davis. In answer to questions as to whether they could recall having had in childhood and girlhood feelings which later they learned to interpret as concerned with sexual instinct, the majority of the women wrote anonymously that they did not remember such experiences. Moreover, among those women who did recall some consciousness of sexual instinct in childhood and girlhood, a large percentage had only indefinite recollections of sexual desires in the pubertal period. In fact, it is interesting to note, in further emphasis on the differences between the two sexes, that a majority of the one thousand married women secretly testified that even in marriage they had not realized any physical meaning of sexual instinct.

"Contrasting these facts concerning girls and women with what is generally known concerning the normal experience of boys in the middle teens, it must be obvious to parents and educators that there is a vast difference between children of the two sexes so far as consciousness of sexual instinct is concerned. It is not probable that women seem different only because they forget their young womanhood. Who ever heard of honest and normal men unable to remember clearly the instinctive demands that suddenly rushed into their lives in early adolescence? The usual experience is so intense and so disturbing that only a boy with low-grade memory could possibly forget his own journey from boyhood to manhood.

"The above statement that there is a vast difference in the conscious recognition of sexual instinct by our boys and girls at puberty must not lead the reader to assume that girls do not require the educational and hygienic guidance which all boys certainly need. Such a conclusion would be far from true; the real truth is that 'the girl problem' is quite different from 'the boy problem.'

"The whole contrast between the sexes may be summarized as follows: Normal girls, as well as boys, definitely begin their real sex life at the onset of puberty, and in both sexes there is in some form a powerful drive of the inherited sexual instinct. Boys quickly sense this fact because of the localized growth and impressive physiological changes. On the other hand, Nature seems to leave numerous girls either totally or partially innocent of the instinctive meaning of the great passage over the borderland where womanhood and childhood meet. But Nature certainly does not leave the girl ignorant of the world of emotions which the dawn of the sexual life

inevitably unfolds for the healthy individual. Girls may not, and it appears that scientific women are right in claiming that a majority do not, realize, as do normal boys, an insistent demand for the use of the senses as a pathway to the heights of their emotional life. Nevertheless, there is in the faintly outlined background of the girl's expanding need of affection the same fundamental sexual instinct which automatically becomes so clear to the boy, but which in the girl is dormant and waiting the call of external stimuli, and especially of reciprocated affection, to an awakening. If that comes in adolescent years, as apparently it does to a minority of girls, the young woman's problem of self-control probably parallels that of the typical young man. But when, as so often happens, the awakening of sexual understanding does not come spontaneously to the developing young woman, some serious social and hygienic problems may result unless education steps in to inform the girl as to what she has not guessed concerning her real self and her relations and her duty to her young men friends. One of the greatest dangers that present-day boys in the latest teens must learn to face with stoical grip on their own impulsive tendencies is the almost inevitable temptation thrown before them in the whirl of social life by perfectly decent and innocent girls who by nature do not understand why and what and wherefore is the young man's problem of self-control.

"Thus, looking comparatively at the marked differences in the adolescence of the two sexes with regard to instinctive recognition of the natural sex urge, it must be evident that any plan for sex instruction and for hygienic and social guidance which assumes complete equality and parallelism of the two sexes from childhood throughout adolescence is sure to fail. The only safe basis for the would-be helpful efforts of parents and educators must be based on the fact that average boys and girls on the dangerous roadway to adulthood are two different kinds of living machines. As such, we should deal with them in education, in hygienic advice, and in social (including ethical) guidance." (Maurice A. Bigelow, Ph. D.)

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"*Influence of the endocrine glands.* Among the glands which are concerned with the formation of internal secretions (or incretions) seven are now fairly well known to physiologists, namely, the thyroid and the parathyroid glands in the neck, the suprarenals near the kidneys, the pineal and the pituitary glands in the brain, certain regions in the pancreas, and the reproductive glands (ovaries and spermaries).

"The secretions of these contain certain substances (hormones) that are distributed through the body by the blood and lymph and produce marked effects in the growth and activities of various organs. Some of these substances are popularly known. The therapeutic use of thyroid extract, of pituitary extract, and of adrenaline or suprarenal extract has been familiar for many years. And during the year 1923, the discovery of insulin, an extract of the pancreas for the treatment of diabetes, was heralded by the newspapers.

"It is now clear to physiologists that some of the hormones from the endocrine glands exert a profound influence in the changes of adolescence. First of all should be mentioned the well known relation of the thyroid

extract to the fundamental nutritional processes (metabolism) of the body, and the enormous importance of this gland in its direct and indirect influence on growth and other changes of the adolescent period.

"Closely associated with the thyroid's influence on growth is that of the pituitary gland of the brain. Its excessive activity in early life is the cause of great height (gigantism); and, strange to say, after growth is complete excessive pituitary secretion results in enlarged skull and bones of the hands and feet (acromegaly).

"If there is undersecretion of the pituitary gland in childhood, the growth of the skeleton is retarded and the individual is a dwarf in stature, usually with small hands and feet and a childlike face. Often fat is massed in a peculiar way over the lower half of the trunks and the upper parts of the arms and legs. The external reproductive organs of these individuals tend to remain in the childhood stage, and pubescence is absent or scanty. In extreme cases, young men with this abnormal condition of the pituitary gland have unusual voices of high pitch and undeveloped sexual instincts, while in young women there is reduced or suppressed menstruation.

"The suprarenal hormones also affect sexual development and adolescence directly. Hermaphroditism, or existence of organs of both sexes in one individual, occur frequently in many animals (for example, many snails and the earthworms). Pseudo-hermaphroditism, or false hermaphroditism, in human life is merely abnormal development of the external genitals probably due to excessive suprarenal secretion in fetal or prenatal life. These abnormal individuals have more or less imperfect organs of both sexes.

"Sometimes, fortunately rarely, overactivity of the suprarenals begins in early childhood, and premature sexual development is the result, girls of three or four menstruating regularly, and boys of six or seven having the sexual characteristics of men.

"Finally, among the glands that profoundly influence adolescence there is the popularly known relation between the reproductive glands and sexual characteristics. It is well known that when deprived of these glands in early life, the individual develops normally so far as growth and all non-sexual functions are concerned, but the usual manifestations of sexual instincts and secondary sexual characteristics, such as voice, pubescence, and bodily form, do not develop.

"The foregoing is an outline of some of the best known relations of endocrine secretions to adolescent development. No doubt the reactions are complicated by various interactions of the endocrine glands. As stated before, marked changes in certain glands may interfere with the course of adolescence, but our present knowledge leads us to think of the normal life of the adolescent period as the combined result of the coordinated and well-balanced activity of all the endocrine glands, and in particular, the thyroid, the pituitary, the suprarenals, the ovaries, and the spermaries." (Maurice A. Bigelow, Ph. D.)

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"*Is puberty a critical period?* Physicians commonly speak of puberty as a 'critical' period in the health of boys and, especially, of girls. Certainly there are numerous individuals whose health is temporarily or permanently injured before the age of fifteen; but it is no longer scientific to

assume that the pubertal period is constitutionally critical. In other words, it is not natural to break down in adolescence. Nothing in the sexual maturing of well-cared-for animals gives evidence that the final physiological preparation for the reproductive function is naturally an exhausting process.

"The accumulating evidence is pointing towards the conclusion that the 'critical' aspect of human puberty in highly civilized countries is probably due very largely to unhygienic conditions, most of which are preventable or correctable in childhood and adolescence. We have elsewhere in this book pointed out many unhealthful habits with regard to food and exercise. In addition, we must remember the strain under which our young people live in these times. Educational overpressure is the glory of the professional pedagog; unhygienic schoolrooms are numerous; premature emotional stimulation is produced by fiction, movies, etc.; shortage of sleep has become almost competitive among young people; exhausting overwork of many poor children and overplay of many others is very common; and piled on top of the demands of school and personal life and work and play are the 'social duties' that often concern even young school children. Truly, our young people between six and sixteen are living at an enormous speed, for which Nature in her evolutionary processes never adapted any animal machine. The wonder is not that many break down in health during puberty, but that so many boys and girls seem to stand the strain fairly well. But how well we do not yet know accurately." (Maurice A. Bigelow, Ph. D.)

Precocious sex stimulation. Body and mind demand that the sexual faculties be not stimulated or used before complete maturity. It is well proven that the frightful mortality and degeneration of the people of India are in large part due to the prevalent child marriages, and to prepuberty sex stimulation. The whole race has become weakened by a too early and excessive exercise of the sex faculty. Mothers are found to masturbate their children, and very young male children become religious prostitutes. The result is a weak race with a dull, cowardly, unfeeling, selfish, base mentality.

Rai Bahadur Bakshi Sohan Lal, member from Jullundur, when introducing a non-official amendment to raise the age of consent within the marriage bond to fourteen years, argued:

"The very high rate of fatality amongst the high classes in this country of newly-born children and of young married wives is due to sexual intercourse and pregnancy of the girl before she reaches the age of puberty or full development of her physical organs. The result of such consummation before bodily development not only weakens the health of the girl but often produces children who are weak and sickly, and in a large number of cases cannot resist any illness of an ordinary type, or any inclemency of weather or climate. Thus some of them die immediately after birth or during their infancy. If they live at all, they are always in need of medical attendance, medical advice or medical treatment, to linger on their lives; or in other words they are born more to minister to the medical profession than themselves and their families or their country."

In a recent issue of his weekly paper, *Young India,* Mr. Gandhi printed an article over his own name entitled "Curse of Child Marriage." Said Mr. Gandhi:

"It is sapping the vitality of thousands of our promising boys and girls, on whom the future of our society entirely rests.

"It is bringing into existence every year thousands of weaklings—both boys and girls—who are born of immature parenthood.

"It is a very fruitful source of appalling child-mortality and still-births that now prevail in our society.

"It is a very important cause of the gradual and steady decline of Hindu society in point of (1) numbers, (2) physical strength and courage, and (3) morality."

The hospital records register many cases of child wives from the age of seven who had been brutally torn and mutilated by brutal husbands. The difficulty of remedy arises from the sexual besotting of a large part of the race.

The writer recalls with horror his first lesson in sexual physiology received from a vicious companion.

As a rule the girl is more fortunate in this respect than a boy. Many fathers consider it superfluous or immodest to say anything to their sons touching sex life. They seem to take for granted that nature will teach a boy the right use of his sexual powers, just as the instinct of nature guides the child to masticate its food, and to defecate, and to urinate.

On the contrary the menstrual function in girls at puberty compels the mother to impart some knowledge to the adolescent girl. And yet many girls are injured physically and mentally because they have not learned in advance the nature and hygiene of menstruation.

"A wise mother or a wise instructress can do much toward the preservation of physical and moral virginity, by enlightening her daughter or pupil at the right time and in a proper manner as to the nature of the sexual processes, and their significance for the whole life of woman. Ignorance in this respect, equally with pseudo-knowledge, entails many dangers. I regard it as indispensable that the adolescent girl should in good time learn from her mother the nature of menstruation, lest she should first receive enlightenment in an unfitting manner from some more experienced female friend. The mother should explain that the impending flow of blood is a natural process, unattended by danger, but indispensable to the sexual life, and a characteristic part of the process of 'growing up.'" (Kisch)

"More than one unwarned girl has been so terribly frightened at her first menstruation that her whole attitude toward the special functions of woman has been forever tinged with dislike and fear.

"It is wise, therefore, to explain menstruation to your daughter several years before her first menstrual period. Explain that it is a natural thing connected with the ability to bear children and still more intimately connected with the proper functioning of the ovaries. Emphasis should be placed on the double function of the ovaries—the production of ova and the formation of the secretion on which the maturing and health of mind and body depend. . . .

"The object of teaching the ten- or eleven-year-old girl the physical facts of adolescence is to free the first menstruation from any attendant unexpectedness. The girl who understands, will take it as a matter of course and will usually experience little distress of mind and body. Unquestionably, much of the unwholesome attitude of women toward womanhood and motherhood is due to the attitude of their mothers toward menstruation. It is ridiculous to talk of the beauty of womanhood, the nobility of womanhood, and the sanctity of womanhood, and yet treat the physical evidence of womanhood's approach as a dreadful infliction, a bitter recurrent disability to be dreaded and concealed as shameful. Concealed it should be, just as other natural functions are concealed, about which custom decrees silence in public, but the girl must be trained to regard it sanely. We do not weep over the boy who begins to shave, though we know that to be clean-faced he will have to go on shaving daily all the rest of his life and that shaving will occasion him considerable discomfort as well as loss of time. Why then commiserate the girl over the simple and normal monthly function of menstruation? Congratulate her, instead, on the new possibilities of womanhood; rejoice in the new powers of mind and body which menstruation heralds; make her feel that coming of young womanhood is a thing to be as glad and proud about as coming of age. Explain that normal menstruation is necessary to health of mind and body. Normal menstruation is painless, and if your daughter suffers more than a slight discomfort, consult the family physician. Do not anticipate pain for her and do not make her morbid by too great care. Talk as little as possible of the changes of body she is undergoing and dwell on the ripening and broadening of mind which should grow out of them.

"It is wise to guard against chilling during menstruation and to avoid overexertion, but unless hygiene has been neglected during childhood no girl needs coddling at this time. Trained dancers are accustomed to dance as usual during the menstrual period and their health is notably good. Break yourself of the habit of lowering your voice whenever you mention menstruation. You do not lower your voice when you speak of the phases of the moon. Say 'menstruation' or 'menses' and not 'monthly sickness' or 'monthlies.' Menstruation is not sickness, and 'monthly' is the common name for a magazine. Permit your daughter to think of menses as natural occurrences and to hear magazines referred to without menstrual association" (Ruth Kimball Gardiner)

Complete ignorance of sex is impossible for an adolescent child. Such ignorance would be a grave defect. The reticence which should cover sex phenomena is not based on their abhorrence, but on their sacredness. As in a church of the living God we speak reverentially of holy things; so in face of these marvelous biological phenomena, of the temple of the Holy Ghost, we speak fittingly and with becoming reverence.

"Life, with what it yields of joy and wo, hope and fear, depends to a great degree upon sex relations. These, to quote Emerson, are abnormally powerful. Nature was so intent on preserving the species that she overloaded the procreative passion at the risk of perpetual crime and disorder. So it would be a Hamlet minus the Prince to ignore this passion in any discussion of youth, and it is nothing short of injurious folly to do so at a

moment when young people are openly concerned as perhaps never before with the sex problem. They resent the evasions or repulsions with which the issue has been treated by their parents, and they do this the more readily because they are well aware that questions concerning the origins of life naturally arise in the mind of every healthy adolescent.

"Not a little morbid curiosity, immodesty, and even impurity in youth is traceable to an unwise repression of knowledge which leaves the boy or girl at the mercy of casual companionships and the back alley. Matters demanding the home's most delicate care and the sympathetic counsel of parents, teachers, physicians, and pastors are dragged in by street arabs to enforce foul allusions or obscene stories. This neglect, and the subsequent perversions, account for a large number of unhappy marriages.

"On the other hand, it is significant that Dr. Katherine B. Davis should ascribe the large majority of one thousand successful marriages which she personally had investigated to proper sex instruction obtained beforehand.

"A sound understanding of the technique of love would remove inhibitions and prevent the blundering which either exterminate the passion altogether or accelerate its degenerate phases. The celibates, the mismated, childless, divorced, and the mental or moral wrecks who write me weekly furnish convincing evidence of the evils of sex ignorance and sex prostitution, and also of the close relation between them." (Dr. S. Parkes Cadman)

All other evils however fade into insignificance when compared with the mighty vice of masturbation, which in most cases is contracted through ignorance.

Habits of vice are often contracted very early in life. Even mere babes love to play with their genitals. Unscrupulous nurses tickle or palpate the genitals of children to quiet them. The difficult problem of explaining the sexual processes to children has been so ably treated by D. B. Armstrong, M. D., and Eunice B. Armstrong, A. M., in their prize essay, "Sex in Life", that we have reproduced the article in full.

The treatise is true as far as it goes, but does not give sufficient emphasis to the moral motives in conduct. There is a sad lack of the supernatural element in all non-Catholic morality. An appeal for continence based on physical efficiency, self-respect, honor, family pride, chivalry, patriotism, or any other natural motive will often fail, for the reason that in *aestu passionis* the moral sense of the sufferer, weakened by excesses, is not capable of the sentiments to which these exalted natural motives appeal. Moreover, no true ethical code can be set up which ignores that doctrine of the Catholic Act of Contrition: "My God, I repent of my sins and I detest them, because I fear the loss of Heaven and the pains of Hell; but most of all, because they offend Thee, my God, Who art all-good." Some, as Dr. Pusey (Syphilis as a Modern Problem), believe that religion has failed, and that medicine must take its place:

"The sexual appetite is a natural phenomenon; after hunger, it is the dominant influence of man in the whole conduct of his social relations. And from the biologic standpoint, no plan for the reduction or suppression of venereal diseases can appeal as practical which does not accept the fact

that the sexual appetite, except within narrow limits, is beyond society's control. If syphilis is to be controlled, its control must come by treating it as a sanitary problem. Medicine can offer now practical measures which are effective for such control."

Though Doctor Pusey mentions only syphilis, his reasoning is applicable to the whole sex problem.

Now, no man should deny that in medicine religion has a powerful ally. Man is an animal, albeit a rational one. But the true observer of human life will deny that religion's influence be restricted within those "narrow limits." Natural motives cannot make a man *moral* in the true sense of the word. Natural motives may make a Chesterton, but they cannot produce a St. Jerome. The mormon violates no purely natural law; in fact, as far as the materialistic philosophy goes, nature seems to favor polygamy. Some physicians lament the convention of society which forbids legal polygamy, since they declare that the monogamous man is the exception. We believe that we can appeal to the testimony of the Catholic priests of the world in asserting that, while it is true that the greater number of young men fall into sexual sins, it is the exception to find a Catholic man who violates his marriage vows.

It is not nature that has made man monogamous; it is God's command and grace.

Against those materialistic hygienists who wish to replace the religious teacher by the public school teacher and the health officer we quote the following from Dr. Edward L. Keyes of Cornell University (Morals and Venereal Disease):

"We have already seen the failure of the attempt at teaching sex hygiene in the public schools to children who knew nothing of the subject, by teachers who seemingly had not even the wit to guess what the children did know. Now the wise plan is being tried of teaching the teachers, in order that they may at least understand the situation. We have seen college men suffer the successive phases of what Dr. Exner appropriately terms 'pathologic emphasis' which 'wholly failed to lift the subject out of the prevailing atmosphere of vulgarity;' 'physiologic emphasis' which 'sought to interpret the sex life in its relation to developing manhood' and 'emphasized too exclusively the physical aspects of the question'; and 'idealistic emphasis', of which Dr. Exner says, 'The students were hungry for this kind of teaching, and their splendid response to it shows that every student is an idealist.' "

And again ibid.:

"Set the proven chastity of Catholic priesthood against the materialism and socialist and Nietzschean philosophy; and we may fairly conclude that there are no known limits to the control of sexual passion.

"With sufficient moral incentive any passion may be controlled. That the whole world's history is one of uncontrolled passion is no reason to despair. So is the whole world's history one of treachery and murder. We may well be dissatisfied with a past, wherein moral influence and church dominion have fought alone against man's passion. We may well invoke every aid that hygiene can afford in the battle against venereal disease.

We may well recognize that the ideal opportunity to control the sex passion is in early youth before the tiger that is in us has tasted blood. We may well hope that the combination of ancient ideals and modern methods shall result in a material reduction of the great Black Plague. But we must not permit ourselves to be discouraged into complacent contemplation of the 'narrow limits' within which passion may be influenced. Until the freedom of medical students from infection bears witness to the contrary, we must grant to moral education the first place in the campaign against venereal disease. The bright light of our new and wonderful science of hygiene must not blind us to the fact that we are still human, that in youth at least the sexual appetite is indeed man's strongest passion, that this passion is indeed the essential cause of venereal disease, and that for the control of this passion we have but one weapon,—the education of the will, moral prophylaxis."

Among the advocates of social purity Dr. Morrow merits a high rank. We quote the following:

"There has always been until recently an irreconcilable conflict between the moralists and the hygienists. The former look upon vice as far more disastrous to society and the individual than its resulting physical maladies. The hygienists look upon the effects of vice, the diseases that it engenders, their menace to the public health, their morbid irradiation into the family and social life, and their pernicious effects upon the descendants and the race as the greater evil.

"What has been termed the fundamental opposition between moral and sanitary control should no longer exist. It is not a question as to which is the greater evil, vice or its diseases, nor which should be the exclusively appropriate remedy. The medical man and the moralists are both interested in the correction of the social evil; instead of working independently and often antagonistically, there should be co-operation and concert of action. Many medical men are disposed to consider the social evil solely in the light of a sanitary problem and treat it as such, entirely ignoring the moral questions involved, on the ground that hygiene has nothing to do with the regulation of morals; its object is to preserve health. But it may be said that the office of public hygiene is not simply to limit diseases which affect populations; its highest function is to develop all those conditions which conduce to public health, which in its highest expression is inseparable from public morality." (Prince A. Morrow, M. D.)

If the sexual organs of an adult be healthy, they will at times cause sexual feeling. If they become intensified to a degree to threaten the self-control of the mind we call it passion. It will occur sometimes by the inherent power of the normal healthy activity of the sexual organs. This is especially true in women a few days before menstruation and for some days after its termination. It is nature's impulse to coitus, as that is the most favorable time for impregnation. Though a similar periodicity cannot be established in the life of the male, the superabundance of the seed in the seminal reservoirs will cause sexual feelings and erections without any voluntary act on the part of the man. Sexual feeling is also most inti-

mately connected with the thoughts of the mind, and with local irritation. Mental concepts cooperating with various excitants of the senses may cause such a congestion of the genital organs that inhibition of the natural impulse of sexual passion be impossible. In fact, the apprehension of the immorality of unlawful sexual gratification is in inverse ratio to the degree of sexual excitement.

Nature's law impelling a man to complete the lawful act on which reproduction depends becomes an adversary of the moral law outside of marriage. This state of extreme excitement is not suddenly thrust on a man. It is a climax reached after a series of causes which in marriage are the lawful prelude of coition. The beauty of the body, labial and manual caresses, and words of love are factors in this lawful love prelude.

In the Song of Songs, the lover's delight in gazing on the beauty of his beloved's body in lawful marriage is taken as a type of the soul's spiritual love of Wisdom, personified as a bride. This figurative language presupposes the lawfulness of the type.

As all these concepts and acts are unlawful outside of marriage, *a fortiori* the climax to which they lead is a mortal sin outside of marriage; they can not be excused by reason of the overmastering impulse, which is voluntary in its causes.

Our conventions of courtship are for the most part wrong. The social behaviour of our young people tantalizes nature into rebellion. Intimacies lawful only in marriage are often practiced. Time, place, dress, attitudes fan the flame. The result is that the minority enter into marriage as chaste brides and bridegrooms.

After betrothal the danger is greater and the delinquencies more frequent. The false persuasion seems to gain entrance into the minds of many betrothed, that the unchaste action and dishonored step is but an anticipated use of what eventually shall be of lawful use. The lover presumes the husband's "way to the forfended place."

This is a false position. No such anticipated right exists: it is not even a palliating circumstance. The woman is with her lover "in double trust." First, as she is a woman claiming a man's protection, defense, respect. Secondly, as a betrothed bride: a man who drags down into the pit of unchastity and robs of "the immediate jewel of the soul" the woman whom he contemplates to be "bone of *his* bones and flesh of *his* flesh," his mate, the mother of his children, his other self, is not a man.

In life's journey, especially in "the slant of life," how bitter will be the thought of the lost estate of true womanhood? How can the man envisage that drab as the inspiration of his toil? the exemplar for his children? The woman who sacrifices her chastity throws away the pearl of great price. Full oft the lover tires of her before their nuptials and discards her. And then she carries a rooted sorrow in the mind and a consciousness of shame forever.

It may be that passion may bring to pass a marriage. Satiety follows upon sensual gratification.

"What is the love of men that women seek it?
"In its beginning pale with cruelty,
"But having sipped of beauty, negligent,
"And full of languor and distaste."

As the basis of admiration and esteem has been shattered, the husband cools toward his dishonored spouse: she is "a mourner at passion's funeral."

The betrothed often by unrestrained familiarities so excite themselves that self-control is overmastered, and a crime is committed. It is useless for the spiritual director to inveigh against the culminating defilement, unless he vehemently caution against the causes. The aphorism, "Nil sapit amanti," is applicable here. The moral law will have small savour for a man intensely excited by the unlawful contact of a woman he loves.

The modern conventions of courtship in our country are the cause of much sin and unhappiness. The much vaunted independence of the modern girl is camouflaged lewdness. The impressionable, impulsive souls of lovers need the restraints and safeguards of parental or other surveillance. The plea that the intelligence and self-respect of the woman protect her is a fallacy. It is proven false by experience. There are indeed many characters of such sterling qualities that they may stand a high test; but the conventions of human conduct must contemplate the average human individual. Now the ugly fact is that under the excitement of passion, fomented by undue familiarity, the social behavior of our people is often immoral. Moral ruin is often a descent through a succession of acts, each a trifle more reprehensible than the preceding; each a logical development out of the preceding. "Those who love danger shall perish therein." It is misleading to represent proper restraints and safeguards as unnecessary to our self-glorying age. This presumptuous Pelagianic conception leads us into temptation, wherein many fall. By nature we are prone to evil. The social evils of our age are many and great. *"Principiis obsta."*

Among the powerful temptations of our decadent age are the dance, the automobile, the lewd theatre, and immoral reading. The two last evils are in se sinful and must be avoided as any other sin. This applies to all immodest plays and operas and to all immoral printed matter.

Touching dancing and the automobile it is difficult to establish a satisfactory code. We can not absolutely forbid the dance and the automobile, but the prudent guide of souls will unreservedly forbid as in se immoral certain dances, mostly of American origin, which in their very nature induce immodest attitudes. Such are the fox-trot, the tango, the shimmy, the cheek-to-cheek, the turkey-trot, the camel-trot, and others of the same nature, which have arisen or may arise.

All dances are a stimulus to sexual impulses: the aforesaid dances have no other end in view. The one-step, the two-step, the waltz, the polka, and other such dances are very liable to degenerate into a sensual excess. It would be unwise indiscriminately to condemn them, but their tendencies should be clearly proclaimed.

Without fear or favor the pastor of souls must condemn all such social indecencies. All may not listen to him; but the blood of those who disobey his admonitions shall not be required at the hand of the man who admonished them.

Thomas in "Source Book of Social Origins" scientifically reviews the influence of the dance upon primitive people:

"In the dance both parties rise to a passionate excitement; they become intoxicated by the tones and movements, the enthusiasm rises higher and higher, and swells finally into a real madness, which not rarely breaks out with violence."

The Medical Review of Reviews quotes the aforesaid paragraph in proof of its own view:

"There can be scarcely any doubt that dancing came about as an adjunct to sexual stimulation. As such it still exists, undisguised among primitive peoples, and as such has existed among the peoples of antiquity. It still retains this original purpose among us to-day, but it is not avowed as such openly."

An extreme attitude against this evident source of evil will defeat itself. The young will consider total prohibition of dancing as an idiosyncrasy of their superior, and will disregard it as unreasonable. The most that may be accomplished is to enforce the law against every indecent mode of dancing, and give the solid reasons for the enforcement.

The proper regard for the good name of woman should move all concerned to demand a chaperon for the lady in automobiling, and, in fact, whenever she accompanies her lover upon any journey, or receives his visit, whether at home or in any other place. This prudent convention needs not become a law of the Medes and Persians, but in general it would save much sin and sorrow. This is not setting a watch upon the woman, as an intimation that her virtue be weak and inconstant, prone to fall in the opportunity; but it is a noble protestation to all that souls which contemplate no sin are not unwilling to submit to an honorable testimonial of good conduct.

One of the deplorable signs of the decadence of our times is the immodesty in woman's dress. Other immodesties attend on this damned fashion. Most pertinent are the words of Pope Pius XI:

"The unfortunate mania for fashion causes even honest women to forget every sentiment of dignity and modesty. The decrease of womanly reserve has always been a sign of social decadence. The vanity of woman causes the disintegration of the family. An immodest mother will have shameless children. A shameless girl cannot be a good wife. It is possible to dress with ladylike decorum without imitating monastic severity."

Clothing. Clothing should be as light as is consistent with modesty. No one desires the return of the old dirt-sweeping long skirt.

In cold weather outdoor clothing may be made proportionately heavy, but indoor clothing should be light. Porous underclothing is most hygienic.

MENSTRUATION

The periodic flow of mucus and blood from the female genitals is variously termed the menses, the periods, catamenia, the monthly sickness, the monthlies, the flowers, the courses, the "sick time," being "unwell," etc. Menstruation is a physiologic process coterminous with the reproductive life of woman, from puberty to the menopause, also called the climacteric or change of life.

"*Menstruation.* During the monthly periods of women, especial care and hygiene is necessary. The usual life should go on, but undue fatigue, overwork, and strenuous exercise should be avoided. There should be plenty of rest and freedom from nervous strain." (Allan J. McLaughlin, M. D.)

"The menstrual flow begins as a whitish discharge, but soon becomes bloody, and contains red and white blood corpuscles, degenerated, ciliated, and columnar epithelium, vaginal and uterine secretions and many micro-örganisms, many of them pathogenic." (De Lee) Many biologists consider the cause of menstruation as still unknown.

It is well proven that, in ordinary circumstances, a cold climate retards the advent of puberty.

In all climates girls arrive at puberty about two years earlier than boys. Legal codes as a rule are based upon this physiologic fact.

Engström obtained data of 3,500 Finnish women. There were two cases of puberty at 8 years; one instance of puberty at 26 years. From 12 to 17 years was the interval of greatest incidence; the highest number, 778, began to menstruate at 15.

Grusdeff for Russia in 10,000 women found one pubescent girl at the age of 9; one at the age of 32; the highest incidence, 2,012, was at the age of 16 years.

In Germany, according to Krieger and L. Mayer, out of 11,500 cases recorded, menstruation begins in the highest number, 18.931 per cent., at 15; the next most frequent age, 18.213 per cent., is the age of 14 years.

In Great Britain, according to Krieger, the average age is 15 years, 1 month, 5 days.

According to Brierre de Boismont, in France the most frequent age of puberty in girls is 16 years. In Paris the onset comes about a year and a half earlier.

The average for Spanish girls is 12 years.

For Asia the statistics are meagre: Rouvier out of 742 cases observed in Syria estimated the average age to be 12 years.

This calculation seems to place the average age of puberty a little too late.

The age of 14 seems to be the most frequent age of puberty in Japan.

In tropical South America girls begin to menstruate from the age of 9 to 14 years.

Calderini, for Italy, from observations of a thousand cases, places 14 as the most usual age of the onset of menstruation.

As a rule the well-to-do classes menstruate about a year earlier. Also urban life seems to accelerate the menarche about a year.

Many other circumstances enter into the reckoning. Kisch on the authority of Montgomery reports the case of a girl who began to menstruate at the age of one year. She gave birth to a child when she was ten years old. He also cites a case from Haller of a case in which at birth the pubic hair was already grown. The girl menstruated at the age of two years, and at the age of nine years gave birth to a child. Carus cited by Kisch reports a girl who began to menstruate at the age of two years. Pubic hair appeared and the breasts were developed at three years of age: she became pregnant at the age of eight. Even in America Martin declares that he met a grandmother at the age of twenty-six.

Puberty is a very important epoch in a woman's life.

"With the puberal development of the external genital organs is associated an increase in the sebaceous secretion of these regions. On the clitoris and its prepuce, and on the folds and in the furrows of the vulva, in consequence of insufficient cleanliness, an accumulation of sebum and cast-off epidermic scales readily occurs; such an accumulation may become rancid, may irritate the skin, and may thus give rise to erosions and to purulent secretion.

"In chlorotic girls at the time of puberty, on account of the anaemic condition of the blood, eczema is not uncommon, especially on the hands and the face. On the face, or on the forehead, red papules appear on circumscribed areas, and become vesicular; raw, weeping spots are thus formed, and have a very disfiguring appearance. Such eczema may occur also in connection with disturbances of menstruation, when the menses are scanty and pale, or when dysmenorrhoea is present.

"At the time when menstruation ought to appear, but fails to do so, sometimes also, when menstruation is regular, with each successive period, an eruption of urticaria takes place; it usually disappears quickly, but in some cases is more persistent; owing to the intense itching it is always an extremely distressing complaint. Sometimes it takes the form of urticaria factitia, in which the skin reacts to every kind of mechanical stimulation, such as rubbing, scratching, or pressure, all of which alike lead to the formation of wheals, which may be diffused all over the body. Less often in association with disturbances of menstruation, acute oedema or erythema is observed.

"Finally, we must mention herpes progenitalis, a rather uncommon acute condition in which, with violent itching and burning sensation, intense redness and oedematous swelling of the skin, vesicles form on the praeputium clitoridis, the nymphae and the inner surface of labia majora.

"*Hygiene During the Menarche*—It is the object of rational hygiene to increase the resisting power of the organism, which has been depressed by the processes of the menarche, in order that the increased demands made by the awakened sexual life may be adequately met.

"The principal means for this purpose are, suitable diet, a suitable mode of life, and the employment of physical therapeutic measures, among which strengthening and hardening measures are to be preferred.

"The diet should be at once as richly albuminous as possible and readily digestible, there should be several, four or five, meals every day; in chlorotic patients food should be taken at regular intervals of two to three hours. Meat should be a predominant article in the diet, but fresh vegetables should also be eaten in abundance for the sake of the nutritive salts they contain; the vegetables rich in compounds of iron, such as spinach, oats, beans, and lentils, are to be recommended; fruit, raw or cooked, should also be taken in considerable quantities. The evening meal should not be too succulent or too plentiful; it may best consist of soft-boiled eggs, an omelette, or milk.

"Chlorotic patients should even at their first breakfast have a meal rich in albumin, such as a considerable helping of meat, or a beefsteak, with rolls, butter, and tea or coffee. Milk should be taken in small quantities only, not more than a pint to a pint and a half daily; only when solid food cannot be tolerated should milk be given freely. Beer and wine are often of value in chlorotic girls from their stimulant action on digestion and circulation. Half an hour's rest before and after meals is useful. . . .

"Kahane recommends for chlorotic patients the systematic use of Bavarian beer, to the amount of about two pints daily; it should, he says, be a beer rather dark in tint, full-brewed, rich in malt, but containing a comparatively small proportion of hops, alcohol, and carbonic acid. Jaworski has recommended a dietetic iron-beer, containing 4.7 per cent. of alcohol and from 0.0317 to 0.0644 per cent. of iron.

"When girls are at the same time anaemic and very thin, fat-containing foods must be taken in abundance, such as milk, butter, and cream; also large quantities of carbohydrates. Farinaceous foods, rice, potatoes, arrowroot, sago, tapioca, oatmeal, barley meal, carrots, turnips, sweet fruits, grapes, dates, pippins, plums, pears, and preserved fruits—all these must appear at table more frequently than usual; beverages, in addition to milk, that are suitable are chocolate and cocoa, Bavarian beer, and sweet, heavy wines.

"The diet-table of such thin chlorotic patients should be as follows:

"First breakfast, 7:30 to 8 a. m.: Coffee or cocoa with milk, or a pint of milk, white bread and butter, honey. Second breakfast, 10 a. m.: Half a pint to a pint of milk, egg and bread and butter, or sandwiches of sausage, ham, or roast meat. Mid-day dinner, 1 p. m.: Soup, roast meat with vegetables and potatoes, or fish may take the place of the soup, sweets to follow. Afternoon, 4 p. m.: Coffee with milk, or a pint of milk, with bread and butter. Supper, 7:30 p. m.: A plate of meat with accessories. Evening, 9 p. m.: A glass of milk.

"In the treatment of the anaemic form of obesity, to which chlorotic patients of the better classes are subject, in consequence of sedentary habits and overfeeding, the diet must be so arranged that albumins predominate, while carbohydrates should be given sparingly, and as little fat as possible.

As the average quantities of the food elements required in such cases, I suggest, 200 grammes of albumin, 12 grammes of fat, and 100 grammes of carbohydrate.

"The quantity of fluid taken must be as small as possible, since the deprivation of water may result in a proportionate increase in the solid constituents of the blood, and thus increase its haemoglobin richness.

"The amount of physical exercise taken by young girls at this period of life must vary according to the circumstances of each individual case. In general, we may recommend for them much active movement, especially in the open air, in order to counteract the effects of sedentary habits and confinement in close rooms. Chlorotic patients must, however, be careful to avoid overdoing their exercise, and in some cases it will be necessary to limit the amount of this very strictly. In severe cases of chlorosis, Nothnagel, Hayem, and other authorities recommend complete rest in bed for from four to six weeks. This rest-cure can be carried out as far as possible in the open air, and can be combined with systematic massage and the use of passive movements." (Kisch: "The Sexual Life of Woman")

"Hygiene of Puberty for Girls. The one special hygienic problem of all girls in puberty relates to menstruation. The beginning of menstrual periodicity in normal girls is highly variable. Often the first hemorrhage is scanty and almost escapes the child's attention; there is no marked physiological or psychological disturbance, and the periods are regular from the beginning. In other cases, the girls are very restless, suffer pain (dysmenorrhea), have irregular periods of two or three months for one or more years before beginning regularity. Apparently the great majority of girls are almost regular from the beginning. As a rule, the hemorrhage lasts from three to five days; a full week is not common. Any great irregularity, pain, or excessive hemorrhage in the pubertal years should be called at once to the attention of a good physician. Even if nothing serious is developing, a physician will be able to add to the comfort and health of the developing girl.

"It has long been the general opinion that most women are depressed physiologically and psychologically during the menstrual period. Several years ago Professor Leta Hollingworth investigated this problem, using as her subjects a group of college students and instructors and some trained nurses. Careful physiological and psychological tests failed to show any essential difference in the menstrual week. In short, the experiments led to the conclusion that, at least in the type of educated women under examination, it is possible for the individual to force herself to respond normally to the various physiological and mental tests which were used. This is in harmony with the well-known fact that, altho one is feeling quite ill, it is often possible in an emergency to force oneself to do heavy physical and mental work.

"With regard to the hygiene of menstruation, prominent physicians advise that a young woman should guard against fatigue, excessive work, or strain. For this reason, vigorous running and jumping and other violent exercises, which might not be harmful in the other three weeks in the month, should be avoided during the menstrual week; but there should be

regular and moderate exercise. It is important to avoid chilling the body, because this might result in congestion of blood in the uterus. For this reason it is best to avoid taking tub or shower baths, and especially girls should avoid going around with wet shoes and stockings. As a rule, this precaution should be applied one or two days before the expected beginning of each period." (Maurice A. Bigelow, Ph. D.)

"It is of great importance that in girls at this time of life gynecological examination should be undertaken only in cases of the utmost need, and this restriction should be especially inflexible in the case of girls with a neuropathic predisposition. Instances have been observed in which a vaginal examination, the introduction of a vaginal speculum, or the use of the uterine sound, has determined the onset of a psychosis. Still more does what has been said hold true of local treatment in gynecological cases. Repeated passage of the uterine sound, cauterization of the cervix, and the manipulations of gynecological massage, make a very deep impression upon the mind of a girl, and give rise to morbid ideas and erotic storms, so that even in those with a powerful constitution, various neuroses, neurasthenic states, and even mental disorders may result.

"If in such cases, especially in girls of neuropathic temperament, gynecological treatment is quite indispensable, a single, though energetic, operative procedure is to be preferred to a number of successive, though, taken singly, less extensive, manipulations of and in the female genital organs. The importance of this proposition has been repeatedly established. Sanger, for instance, points out as a fact to be regretted that uterine cauterization with mild caustics is far too frequently undertaken; and Odebrecht, from the same standpoint, proclaims the advantage of a single curetting as compared with milder intra-uterine impressions repeated during a course of treatment lasting many months. On the other hand, the physician must bear in mind the fact, established by the record of a very large number of cases, that in women predisposed to psychoses severe gynecological operations are apt to lead to the actual appearance of mental disorders, or to the exacerbation of mental disorders which have previously been very mild or have merely threatened to appear. Careful consideration is needed, on the one hand as regards the severity of the disease of the genital organs, and on the other as regards the resisting power, temperament, and constitution of the girl concerned, and in many cases a consultation between the gynecologist and the neurologist is expedient.

"A very powerful influence on the physical and moral well-being of the girl at puberty is exercised by her domestic upbringing. The general truth of Goethe's saying, that the circumstances into which we are born exercise a determining influence on the whole life, being admitted, we have to remember that this applies with especial force in the case of girls.

"The educational views which obtain at the present day among the upper ten thousand, are by no means calculated for the production of a woman healthy in body and sound in mind. From the time when the young girl becomes sexually developed, the claims which society makes upon her become depressing. Every day, by a number of stimuli, her curiosity and her desires are directed toward sexual matters. Visits to museums, picture galleries and theatres, the perusal of modern romances, the

free mingling of the sexes in all places of amusement—all these combine to awaken prematurely an instinct to which the 'old-fashioned' methods of education allowed a much more prolonged slumber. In other cases, the mother's supervision of the developing girl is hindered and rendered insufficient because the mother herself is claimed by her society duties and taken much away from her home. In addition, the young brain is overburdened with mental work, the modern idea of the equality of the sexes in matters of love is instilled, and a desire is artificially evoked, and is matured by a certain idle vanity, to indulge the 'natural' instincts—to manifest sexual passion and to indulge it to excess—and thus the modesty so natural and so becoming to young girls is completely lost. Nourished in such a soil, neurasthenic and hysterical states, disorders of menstruation, and masturbation, cannot fail to flourish.

"In these respects also a change is requisite, and a mode of upbringing must be inculcated from which everything likely to inflame the sexual impulse is removed. For the adolescent girl a systematic alteration of work and recreation must be arranged. From great entertainments where she will mix with young men, from theatres, evening parties and balls, the young girl at the time of the menarche, at the period when menstruation commences, must as far as possible be kept away, and such pleasures must be reserved for a more advanced stage of this period of development. Intellectual overstrain, the overtaxing of the young head, must be avoided; the acquirement of knowledge must take place gradually and slowly, and in a manner adapted to individual peculiarities. Intercourse with female friends also requires supervision in respect of the moral characteristics of these latter. Religious reverie must be avoided, but also to be avoided is the modern nihilism in respect of religion and good morals. Books must be carefully chosen in order that the imagination may remain pure and in order that girlish illusions may not be prematurely destroyed. Domestic recreations in the way of games, music, singing, painting, and other forms of artistic culture, are of importance for the development of a strenuous faculty for learning. Travel in regions where the scenery is beautiful, forms a most valuable means for the ennoblement of the intellect and the emotions.

"Additional matters demanding attention are, as already mentioned, the suitability of the diet, and proper physical exercise. All stimulating articles of food are to be avoided, the excessive use of meat is to be forbidden, and a sufficient mixed diet, containing both animal and vegetable substances, is to be prescribed. Tea and coffee should be taken as sparingly as possible, and alcoholic beverages must be absolutely prohibited. The regulation of the bowels is of great importance. Young girls should accustom themselves to evacuate the bowels every day at a fixed hour, the best time to adopt being either immediately on rising or just after breakfast. Constipation is very apt to lead to the production of irritable conditions of the genital organs.

"We can point out as a happy instance of modern progress that the practice of certain physical exercises has actually become the fashion for young girls. Gymnastics, with or without apparatus, swimming, skating, and lawn tennis, involve a number of bodily movements advantageous for

the health; and in connection with most of these the enjoyment of fresh air offers an additional favorable influence. Bicycling, however, at this period of life, is open to many objections, not only on account of the likelihood of direct injury to the genital organs now in course of development, but also on account of the impulse it produces toward onanistic manipulations.

"Especial attention must be paid to the clothing, regarding which the requirements of fashion so often conflict with those of hygiene, the victory, unfortunately, in most cases falling to the former. The period of menarche is indeed usually regarded as the proper time for the young girl to begin wearing a corset, if it has not been worn before. In this connection M. Runge makes the significant remark: 'As long as bodice and skirt form the two principal articles of woman's clothing, the corset or some similar article cannot be dispensed with. The vicious features in the corset are its constriction of the thorax, with the object of giving the woman a "figure," and the introduction into its substance of strips of whalebone or steel in order to give firmness to the figure. The harm done by the former feature, the compression of the abdominal viscera, the corset liver (lacing liver, constricted liver, Ger. Schnürleber), the movable kidney, etc.—all are so well known that they need not be particularly described. But the strong pressure from above has a deleterious effect upon the internal genital organs also, leading to passive hyperaemia and to displacements. The "bones" of the corset take part in the compression, and they replace the functions of the muscles of the back. If a woman who has long worn a corset lays it aside later in life, she complains that she is no longer able to hold herself upright. In consequence of insufficient work the muscles of the back have become incapable of keeping the back straight. The corset, then, must neither constrict the body, nor must it contain "bones." An article of clothing analogous to the corset is, however, required for the support of the skirt and the petticoats that clothe the lower limbs. These latter are usually fastened by means of bands which encircle the body above the crest of the ilium. In order to give these bands a sufficient hold, this region of the body is compressed by the corset. The burden of skirt and petticoats is thus borne by a furrow, above the pelvis and below or in the region of the asternal or false ribs, which is in great part artificially produced.

" 'All this is bad. In order to avoid the necessity for any constriction, the petticoats should be fastened to the corset, and this latter should be supported from the shoulders by means of shoulder-straps or braces crossing one another behind. No constriction of the thorax then occurs, and if the corset has suitable supporting pouches for the breasts, and the wearer is accustomed to hold herself erect, the figure of a well-formed woman thus attired is far from unpleasing, and is, above all, natural. If the weight of skirt and petticoats is too great to be borne by the shoulders, the burden can be divided, some being fastened to the corset, others tied around the waist. This method is less to be recommended, but may be regarded as a permissible middle course. If chemise and drawers are woven in one piece,

as in the "combination" undergarment, there is one article less to be attached to the corset. Recently a number of corsets and articles of clothing have been made in accordance with these principles.

" 'The growing girl, then, may wear a soft corset with shoulder-straps, made to measure, to which all the garments clothing the parts below the waist should be made to fasten. It must unfortunately be admitted that this rational mode of arranging the clothing cannot be adapted to the "low-dress" which etiquette demands on so many occasions for evening wear, since with the latter the shoulder-straps cannot be worn.'

"In order to diminish the sexual impulse in girls at the menarche, where this impulse has developed prematurely or is abnormally intense, and even in later years with the same end in view, it is necessary, not merely that the diet should be suitable and non-stimulating, and that the educational environment should be satisfactory, but above all that there should be regular occupation and regular physical activity." (Kisch, op. cit.)

Base-ball, basket-ball, tennis, rowing, and boxing should be encouraged among children without respect to sex difference up to the beginning of puberty.

As the girl is about to enter womanhood she must be taught to abstain from violent physical effort when nature is making its great claim upon her physical powers. Both body and mind may periodically demand a day or two of repose. These periodic disabilities are not a burden to the adolescent girl, because nature gives to the young woman the sweet consciousness of womanhood.

From puberty to the age of seventeen or eighteen such organic development is in progress in the life of woman that all excess in mental or bodily exertion imperils the woman's health. It is especially in our schools that great care must be exercised to prevent overwork and other excesses.

Moreover, all violent physical exercise should be avoided during menstruation. The girl should not be excessively sex-conscious, but she should know her physiology, and firmly resist all ignorant urging to enter games unsuited to her physical condition. While the menstrual period is the most dangerous, woman should be careful to avoid during her entire menacme violent jumping, lifting of heavy burdens, and all strain of the abdomen as would be liable to displace the womb. This prudence is extremely necessary in pregnancy.

The menstrual symptoms or molimina, which may be present in whole or in part are: headache, malaise, lassitude, chills, flashes of heat, hysteria, constipation, diarrhea, pain in the back, in the ovaries.

The sexual desire is usually increased at the onset and at the cessation of the menses: these periods seem the most favorable to conception, to which nature invites by increased desire. The external genitals are engorged: the discharge from the vulva, cervix, and vagina increase. The uterus is larger and softer; the breasts enlarge, the nipples are darker and more erectile.

The thyroid gland enlarges at puberty: its enlargement may become pathologic: a temporary enlargement of the thyroid accompanies normal menstruation.

"As we shall presently see, the thyroid gland appears to have a particularly intimate relation and control over the function of the sexual glands, especially in the female.

"The functions now known to be exercised by the thyroid gland are as numerous and essential as its anatomical relations with the circulation would lead us to expect.

"Generally speaking, it may be said that it controls and stimulates all growth and development, and throughout life exercises a predominant influence on metabolism, including calcium metabolism, which is an essential factor in the growth and development of bone, and carbohydrate metabolism, on which the heat and energy of the body largely depend, and derangement of which causes diabetes with all its consequences.

"In all these processes the other endocrine glands are concerned, and among them all there is a certain reciprocity of action, some aiding and some opposing the action of others; some taking charge, as it were, of one period of development and inhibiting the action of others which become predominant at another period.

"But thyroid activity continues throughout life, and it is not impossible that under certain conditions the thyroid may deputize for other glands whose function is impaired.

"We have already seen that serious deficiency in the thyroid secretion during the period of development produces cretinism, and occurring in later years myxœdema; while serious excess of secretion causes the distressing set of symptoms known as Graves' disease or exophthalmic goitre.

"Apart from the merely bodily conditions or physiological and anatomical changes produced in these diseases, every variety of mental or temperamental state is represented, from the complete idiocy of certain cretins, through the apathy, lethargy and loss of memory of myxœdema, to the quickened emotions and general excitability of the sufferer from exophthalmic goitre.

"It is evident, therefore, that the thyroid and its associated endocrine glands play an important part in the development of mind and character, and it is now generally admitted that within the limits of normal health there are slight preponderances of one or other set of glands which have a profound influence in determining the temperament and character of the individual.

"A slightly increased preponderance of one of these functions may become pathological without producing the grave symptoms associated with extreme disturbances of function." (Fred. E. Wynne, M. B.)

Owing to the increased activity of the emunctories the body of the menstruating woman often emits a characteristic odor: she is very liable to take cold. The menstruant has often dark circles about the eyes.

"It becomes comprehensible that even in healthy girls, the first appearance of the catamenia and likewise the expectation of the flow induce a certain modification and alteration in the whole nature and disposition.

Girls often lose their previous cheerful and lively character, becoming quiet, self-absorbed, sometimes even melancholy; they are disinclined for study, have a repugnance to all sustained physical or mental activity, become annoyed, and snappish on slight occasion, are restless at night, consider themselves to be ailing, and so on. During the first menstruation girls commonly appear pale and anxious, they have blue lines beneath the eyes, the face has a tired aspect, the movements lack energy, and a general want of tone combined with an abnormal irritability may be noticed. Some days before the first menstruation, the vulva, the labia majora and minora, and the vaginal mucous membrane, are swollen, the clitoris becomes conspicuous in consequence of erectile processes, a slight secretion appears in the genital passage, and the breasts become sensitive and slightly turgid. The urine deposits a thick sediment, and occasionally severe strangury is observed. In many cases, also, digestive disturbances occur, loss of appetite, constipation, or a tendency to diarrhoea." (Kisch, op cit.)

"*Constipation and the Bowels.* Constipation is an ill with which many persons seem to be affected. In most cases this condition can be remedied, the procedure being fairly simple, but requiring some time and effort. Altho constipation is sometimes due to bodily defects which may or may not have been inherited, it is usually the result of poor hygiene. Attention, therefore, to certain rules of personal hygiene will relieve it. The drinking of water in considerable quantities has already been shown to assist elimination not only through the kidneys, but also by the bowels.

"Types of food will assist bowel movements. Fruits are especially fitted for such work and the efficacy of figs and prunes is well known in this connection. Coarse foods, rather than refined or predigested ones, are likewise useful. Bran is a good stirrer up of the intestinal tract. Green vegetables help provide the roughage which is needed.

"The use of laxatives and cathartics is to be condemned. We all know persons who would be unable, or think they would be, to have a bowel movement unless they use a laxative. The continual use of such drugs causes the intestine to cease to function naturally, so that it depends more and more upon mechanical help. It takes quite a while to get the intestine into this unfortunate condition and it requires an equally long time to get it out of it. Chronic appendicitis may be associated with continual constipation. The bowels should be trained to have regular movements as a matter of course. Constipation should never be allowed to get started.

"The best way to prevent or overcome constipation is to adopt a definite hygienic procedure. This consists of a diet of rough foods and fruits, the drinking of plenty of water, considerable exercise, and regularity of habit in the emptying of the bowel. Bending exercises which affect the abdomen, or facilitate the rhythmic movement of the intestines within the body (known as peristalsis) are beneficial. Sometimes constipation goes with nervous troubles, and patients in institutions for the mentally unsound are often victims of it. Bowel movements should occur at least once every day and preferably twice. If persons go longer than one day without such evacuation, there is bound to be a certain amount of toxic

action which lowers resistance. Even the complexion may sometimes be affected with unpleasant blemishes. Constipation can be, and should be, prevented and overcome." (Allan J. McLaughlin, M. D.)

"Common Colds. Colds are called common colds because they are so common. Of all diseases, trifling or important, colds seem to be the most in evidence. All colds are caused by germs, tho there are several kinds, each of which may result in a cold under conditions that are favorable to the specific germ. As in the case of many diseases, there are two factors involved, the germ and the vital resistance of the individual. It is probable that we all have more or less cold germs in us waiting for a chance to develop. When we lower our bodily resistance, these germs get in their work and the intensity of the cold depends somewhat upon the degree to which the resistance is lowered.

"The first rule in the prevention of colds, accordingly, is to build up a healthy body. This can be done, of course, by personal hygiene. The fact that a person has frequent colds is a pretty good indication that he is not living hygienically. An individual who is outdoors a good deal, who exercises, breathes deeply naturally, who avoids fatigue, does not suffer from constipation, and who dresses properly, is much less liable to colds than a person who neglects these reasonable methods of living. As an important adjunct to these rules, the person who does not let others sneeze or cough in his face, and who avoids those with colds has a fairly good chance of escaping colds. Keeping the hands away from the nose and mouth is necessary. A person with a severe cold may wipe his nose with a handkerchief (sometimes without one), contaminate his hands and then shake hands with some one, who soon after may foolishly put his hand to his mouth. Thus, bacteria travel from a sick person to a well one.

"Once a cold has started, the body should be kept warm. If the cold gets considerably under way, it is always wise to go to bed. A very bad cold should have the services of a physician. The presence of a cold is one of the exceptions to the rule not to use laxatives, as a purge is a good thing. A hot foot bath, hot drinks, like flaxseed tea or baking soda, and massage of the chest with camphorated oil are useful home remedies. Patent medicines and quack remedies are generally useless. There are several vaccines which are used for colds, and sometimes these are of benefit. They should be administered by a physician.

"Hay fever is common at certain seasons of the year. It is not a germ disease but is due to irritation of the nose and throat by pollen from certain plants. It lowers vitality and uses up energy needed to combat other diseases. The way to prevent it is to find out to which weed a person is susceptible and then avoid it. Vaccines may also be used by physicians." (Allan J. McLaughlin, M. D.)

"If all the drugs in the history of medicine had been thrown into the sea it would have been better on the whole for mankind, and worse for the fishes." (Dr. Oliver Wendell Holmes)

We should never forget that the common cold it a germ disease and is communicable. This means that it spreads rapidly from person to person. It spreads most rapidly in over-heated, stuffy rooms where the air

is not fresh and pure and in rooms like schoolrooms where there are a number of people.

Sleep with your window open and your mouth shut.

The consensus of competent medical authority is that by high heeled shoes "the whole interior arrangements of woman are thrown out of plumb." Common sense shoes are recommended with soles as wide as the foot. The heel should be broad enough to form a firm support, and should be but little higher than the sole.

"The woman with an absurdly tight shoe looks today as badly 'gotten up' as the one with the tiny waist and large hips. Women's dress has become not only more sanitary and sensible, but more artistic, and nothing has improved more than footwear—that is, ready-made shoes.

"Fifteen years ago the feet of women were generally bad to look upon when bare. They were deformed through small shoes, the toes crowded on top of one another and sometimes bent under. There were corns and enlarged joints, and even bones were displaced through walking in tight shoes.

"The athletic fad, which made women let out their daughter's waists as they never had their own, drove away a host of evils, and among those evils went the tight shoe. Every American woman today, from the heiress to the factory girl, wears sufficiently large shoes.

"This fact can at once be seen in the improved gait of women pedestrians. They no longer mince along, and although the American woman never seems to be able to conquer her tendency to walk too quickly and energetically for beauty, she walks far better than she did even five years ago.

"As a matter of fact, physical science has taught women how to walk and how to care for their feet just as thoroughly as their hands. They know that short shoes are ruinous to the shape of a foot.

"One of the first lessons in foot reform was that a small, tight shoe does not hide but rather accentuates the faults of a badly shaped foot. Pointed shoes are also inartistic, and produce all kinds of trouble with the feet.

"The shoes must fit properly, and if the foot is short and thick through, it is probably in accord with the dimensions of the body. A short, sturdy woman should have a short, wide foot if she is built on the proper plan. It is far more beautiful to have feet in harmony with the rest of the body than to have small feet which do not match."

The sanction of fashion is an arbitrary law which often sacrifices the rights of nature by appealing to a false standard of elegance. Women will renounce their right to health and life to follow the dictates of a criminal fashion.

Small degenerate waists are no longer admired in women. In the last 20 years circumference of the average female waist has increased from 20-22 inches to 26-30 inches. If that fetich of pseudo-civilized savagery, the corset, could be discarded, woman would be advanced a long way towards emancipation from her slavery to an unnatural fashion.

The dress should never repress free movement: the tight corset is an abomination. We pity the Chinese woman who pinches her feet: we admire the Christian woman who pinches her stomach, liver, and womb.

It is a fact not sufficiently noted that women weaken their health by many silly apprehensions of a false modesty. As the breasts of the girl intumesce at puberty, she may foolishly imagine that her physical development must be unduly concealed. Hence the pubescent girl often assumes a stooping posture in standing or walking through the false persuasion that the prominence of the breasts in an erect posture be immodest. The evil results of this false posture are manifold: the action of heart and lungs is impaired, and the development of breasts and nipples is hindered. Many cases of depressed and inverted nipples are due to this habit.

The woman should shield her breasts, and her axillae, but by loose, graceful folds of not too thin clothing.

A savage practice exists among some women by depilatories to remove the hair from the axillae, that these may be shown with impunity. This action is against health and morals. The depilatories are chiefly arsenic, calcium sulphate, and quicklime: they are injurious.

That part of a woman's anatomy is a "pars minus honesta" and should be covered. Since nature gives to this part an adornment of hair at puberty, the woman who reveals it shorn of its natural adornment exposes herself to contempt: her depilation is a disgusting proof of her immodesty.

Women often injure their health by repressing the normal demands of nature. Through false modesty they seem to imagine that the healthy processes of nature be vulgar. This is especially true in poorly furnished schools, offices, and shops, where the woman in repairing to the toilet may in any manner come under observation. Society should make every reasonable provision for feminine delicacy in this matter, but the woman herself should realize that prudery is not modesty. A woman cannot be too modest, but a woman may be a fool. The conventions are to be respected as far as they agree with right reason. We are prudish immodest people. The glory of the pregnant wife or the mother nursing her babe shocks the satyr eyes that look with unabashed lewdness upon the whole anatomy of woman revealed through her thin scanty dress.

Natural processes and sexual processes are not vulgar, degraded, base, or impure. Sexual instincts must be controlled, and in certain states of life entirely subjugated; but this moral law does not mean a Manichaean attitude toward the reproductive functions. Reticence, delicacy, protection, sensible secrecy are beautiful, and perfectly compatible with a noble, dignified, healthy attitude toward nature.

The menses are greatly influenced by psychic excitement. Depressing emotions usually retard or suppress them. Much less frequently a nervous shock may bring on an unseasonable menstruation.

Undoubtedly much of the uterine blood is absorbed: only the superfluous blood and the secretions flow out.

At puberty the first menstrual periods are apt to be irregular. In healthy girls this irregularity rapidly adjusts itself to a definite menstrual period: physical weakness may prolong the irregularity. The important

function of menstruation is sensitive to all causes which affect the woman's physical state.

It is cruelly embarrassing to a woman to indicate in any way, directly or indirectly, in jest or in earnest, that one is aware of her menstruation: with difficulty will she reveal her condition to the physician. The kind offices therefore and special consideration that humane sentiment demands for the menstruating woman must be free from all hint or allusion to her phase. Nervous excitability, waywardness of temper, physical and mental lassitude, and depression of spirits often accompany menstruation in woman. Woman is liable to many "diseases peculiar to her sex, to which we find neither homologue or analogue in man." She is equipped to be the mother and nurse of the living, not the competitor of man. In a measure nature compels her to remain in her own high sphere: even those feminine monsters who strive to unsex themselves, in order to take man's place in society, find an insurmountable obstacle in nature's immutable law.

Speaking of the perverse feministic movement of our age, the eminent lawyer, the Hon. James M. Beck, Solicitor General of the United States, declares:

"The very foundations of the great and primitive institutions of mankind—like the family, the Church, and the State—have been shaken. Nature itself is defied. Thus the fundamental difference of sex is disregarded by social and political movements which ignore the permanent differentiation of social function ordained by God Himself."

The menstrual flow usually reaches its climax on the second day and recedes rapidly on the third day: some slight flow may be observed on the fourth, and even on the fifth day; rarely is it prolonged up to the seventh day. Give three days to the flow and the fourth day to clear up.

Sexual stimulation increases the flow. The normal amount varies from four to six ounces. This is subject to great variation. If the woman is well, the variations in the flow may be disregarded.

The periodicity of 75 per cent. of menstruants is twenty-eight days. A few menstruate every twenty-one days. De Lee estimates that 14 per cent. menstruate every thirty-one days.

Many authors declare that vicarious menstruation has been observed. Thus they claim that in the absence of the uterine flow, a flow of blood corresponding to the periodicity of the menses has been observed to flow from the nose, stomach, lungs, nipples, mouth, ears, arms, bladder, in the order named.

But little is known of this rare phenomenon: there is no real vicarious menstruation, but the disturbances incident to menstruation may induce a hemorrhage from various organs: this hemorrhage has not the properties of menstrual blood.

Precocious menstruation is also rare, but well proven. The degree of precocity determines the degree of rarity. Children of two years have been observed with abnormally developed breasts and external genitals and pubic hair: they also menstruated. At such early age there are no ripe ova, no proper ovulation, but a case is reported by Bodd of a girl of eight years and ten months who delivered a child weighing 7½ pounds.

Pregnancy in girls of twelve is often observed. Such offspring is not healthy: the mother is not ready to bear healthy offspring. Both she and her offspring suffer.

At birth there appears in about one out of twenty female infants a vaginal discharge resembling menstruation. It may be scanty or profuse, and may last from one to six days. Its causes are not well defined: many now attribute it to the action of placental hormones. Usually it has no clinical importance.

The breasts of both male and female infants are more or less enlarged at birth, and a substance like colostrum may be squeezed from them. The cause is unknown. It is not a pathologic condition(infantile mastitis is extremely rare): the breasts should not be squeezed. Gently wash them; lightly bandage them; and *let them alone.*

"At birth the uterus is high in the pelvis pressed backward by the intestines which lie in the uterovesical space. At this time it is pointing upward, and its axis is practically straight. During the first ten years of life it sinks gradually deeper into the pelvis and acquires the angulation between body and cervix known as anteflexion." (Graves)

Menstruation and ovulation are closely related, but the exact nature of this interrelation is still hid.

Menstruation is not peculiar to the human genus: the menstrual periodicity of the female ape is the same as that of woman.

As some doubt has been thrown upon the periodicity of apes, the author directed an inquiry thereon to Dr. Jas. J. Walsh, the well-known authority. Dr. Walsh kindly sent the following letter:

DR. W. REID BLAIR
Veterinarian and Pathologist
New York Zoological Park
NEW YORK

March 19th, 1923.

Dr. Jas. J. Walsh,
110 West 74th Street,
New York City.

Dear Doctor:

Replying to inquiry addressed to Mr. Hornaday in reference to menstruation in female ape, beg to say that this period occurs every twenty-eight (28) days.

Yours truly,
W. Reid Blair,
Acting Director.

Removal of the ovaries causes menstruation to cease: congenital absence of ovaries causes congenital absence of menstruation. In such case neither the womb nor pelvis develops.

Meyer, and Schroeder declare that ovulation begins from fourteen to sixteen days after the beginning of menstruation. This is not proven.

Ovulation is monthly.

"That the uterine mucosa passes through definite cyclic changes each month is a comparatively recent addition to our knowledge, due chiefly to the researches of Hitschmann and Adler, who rediscovered facts that had already been announced years before.

Fig. 42—Cross-section of Uterus near Menstrual Period (De Lee).

"The cycle of change is divided into three phases: (1) Premenstrual congestion, (2) period of menstruation, and (3) postmenstrual involution.

"The premenstrual congestion begins about ten days before the expected period. By this process there is a marked thickening of the mucosa due to an hypertrophy and hyperplasia of the endometrial glands and a

transudation and exudation into the stroma. The mucosa becomes two or three times thicker than the normal, and may reach 6 to 7 mm. in depth. The surface becomes irregular and furrowed as a result of the general swelling beneath. . . . The mucosa is distinguished by two fairly well-defined layers, the deeper containing the dilated and hypertrophied glands, termed the sponge layer, and the outer, denser, and less glandular portion called the compact layer. The dilated blood vessels (seen chiefly between the spongy and compact layers) are surcharged with blood. By diapedesis and by actual rupture (rhexis) blood is poured into the stroma of the mucosa, and by following the line of least resistance toward the surface forms subepithelial hematomas. It is probable that at this point uterine contractions force the blood through the surface of the mucosa into the uterine canal, marking the second phase of the cycle, the menstrual flow. The blood escapes into the lumen, partly through the interstices between the epithelial cells, and partly by actual rupture of the cell layers, small clumps of which may be desquamated and discharged mixed with the menstrual blood.

"With the cessation of the bleeding begins a regeneration of the mucosa. The secretion becomes clearer and finally disappears. The mucosa returns to its previous thickness of 2 or 3 mm. The blood vessels shrink to their normal size, and the extravasated blood in the stroma gradually becomes absorbed, leaving for a time small brownish pigmented spots. The broken surface epithelial layer becomes regenerated by the growth of new cells. . . . The postmenstrual regeneration stage lasts about fourteen days, when the rhythmical changes in the mucosa begin anew.

"If no menstruation takes place, or, in other words, if conception has occurred, the premenstrual mucosa maintains its character and merges into a true decidua." (Graves)

It seems therefore highly probable that menstruation is simply the excretion of the blood which nature had stored up for a possible fetus. The woman is prepared for her great function of child-bearing by a reserve of blood in the first home of the fetus.

"Menstruation is essentially the shedding of a uterine lining that did not receive a fertilized ovum for which it was intended." (Dr. Maurice A. Bigelow)

The quantity of the menstrual discharge varies much in different women, and in the same woman at different times. The general range is estimated at from two to six ounces. The healthy menstrual flow should not clot.

One of the strong innate instincts of woman is the determination to conceal all evidences of menstruation. The menstrual discharge is absorbed by changes of sanitary napkins which are either secretly destroyed or washed. Innate feminine modesty moves the woman to change the napkins frequently, lest they become oversaturated; to bathe with warm water; and to keep all from observation.

From the earliest times woman by instinct and by education has considered it against her dignity and against her modesty to reveal any evidence of menstrual excretion. The Jewish woman remained in seclusion for seven days from the beginning of the flow.

To illustrate the low estate to which Jerusalem had fallen Jeremiah declares:

"Her filthiness (menstrual discharge) was in her skirts." (Lamentations, I, 9)

Esther declares that she abhors the pagan estate into which she was forced as "a menstruous cloth." (Esther, XIV, 16)

Carnal intercourse was strictly forbidden in the menstrual period.

"And thou shalt not approach unto a woman to uncover her nakedness as long as she is separated by reason of her uncleanness." (Levit. XVIII, 19)

In the Old Testament idolatry and sin are typified by the menstrual discharge.

Isaiah, XXX, 22:

"And ye shall defile the silver overlaying of thy graven images, and the golden plating of thy molten images: thou shalt scatter them as a menstruous thing."

Ezekiel, XXXVI, 17:

"When the house of Israel dwelt in their own land, they defiled it by their way and by their deeds: their way before me was as the uncleanness of a woman in her separation."

Zechariah, XIII, 1:

"In that day there shall be a fountain opened to the house of David and to the inhabitants of Jerusalem, for sin and for (menstruous) uncleanness."

The excretions of the digestive and sexual organs are instinctively disgusting: both sexes are moved by a strong natural impulse to cover the pudenda and to conceal their functions. This is especially true in woman touching the natural common function of menstruation.

It it to be noted that the Jewish ritual law (Lev. XV, 19-24) held a woman in her separation seven days. The normal physiologic function would be included within such interval. If the flow were prolonged, or if there were an intermenstrual vaginal hemorrhage then the woman was compelled to remain in legal impurity seven days after the hemorrhage ceased. She was also compelled to offer a special oblation to the priest at the door of the temple. It is evident that such ritual observance was not imposed upon every menstruating woman. The Levitical text in agreement with other sacred references clearly state that the procedure contemplated an extraordinary state, the same as that of the woman whom Christ healed (Math. IX, 20).

Many authorities declare that Jewish women now are separated from their husbands twelve days at the menstrual periods. If this be their practice, it is based upon a false understanding of the Law of Moses. The Talmud is the work of Pharisees.

It is not the mind of the Hebrew lawgiver that menstruation be an evil state or a pathological state, but that it be a natural function which demands a certain modest reserve.

The false superstitions of old touching menstruation were a disgrace to rational man.

Pliny, Lib. VII, 15:

"There is nothing more monstrous than the menstruation of women. By their contact new wines grow sour; harvests are blighted; graftings die; the buds of trees dry up; the fruit falls from trees under which they sit; the brightness of mirrors is dulled by their gaze; the keen edge of steel is dulled and the brilliancy of ivory is dimmed; hives of bees die; rust attacks bronze and iron; their foul odor poisons the air; dogs smell it and become mad; their bite is incurably deadly." Pliny also falsely asserted: "Solum animal menstruale mulier est."

Diogenes declared woman to be "a beautiful temple built upon a sewer."

These crude false superstitions were hard-lived. We find them repeated with approval by many old theologians. The menstrual phase is a natural physiologic honorable function of all adult women. There is nothing in it that should bring contempt on the female sex. Some physical and psychic disturbances are often attendant on menstruation. Morbid introspection, exaggeration of passing trivial ills, and oversensitiveness should be counteracted. Excessive physical or mental effort should be avoided; but normal healthy occupation is better than idleness. Menstruation is a physiologic state in the life of woman. This excretory process should be classed with the excretory process of the bowels: the thoughts should not center upon it. Common sense will move a woman to certain normal precautions against cold, and against excessive physical effort. She may take a few hours extra rest, but she should avoid all over-attention, and auto-suggestion. The less the woman's mind dwells on her menstrual phase, the more normal will the function be.

"Abnormal secretions from the (female) genital tract, not containing blood are generally spoken of as leukorrheal discharges." (Graves)

This discharge is thus called from its characteristic white appearance: for the same reason this pathologic condition is sometimes called "whites." Usually it comes from the endocervix. Nervous excitement and fatigue seem to stimulate the discharge. It is often of a characteristic foul odor, especially when it proceeds from cancer. In leukorrhea the aid of a competent gynecologist at once should be sought. The derangement may be slight and easily remedied; or it may be serious.

Uterine bleeding that occurs independently of menstruation is called metrorrhagia. It is always seriously pathologic.

Metrorrhagia referable to pregnancy may indicate a tubal abortion in extra-uterine pregnancy; or a disturbance of the placenta or of the decidua. Post-partum bleeding is of serious import demanding surgical aid.

Outside of pregnancy metrorrhagia may indicate fibroid tumours, necrotic polyps, or malignant tumours.

"After the menopause all bleeding is metrorrhagic, and should cause grave concern with immediate and thorough investigation." (Graves)

Amenorrhea.—Primitive amenorrhea is a condition in which the menses have not appeared at the proper time. It may have as cause diminished function of the ovaries, chlorosis (green sickness), anatomic abnormality, or general underdevelopment. Some cases are incurable.

Hygiene and ovarian extract seem to be the most effective remedies. The less serious cases yield to simple remedies, such as increased nutrition, a cheerful state of mind, and proper hygiene.

Secondary amenorrhea is an arrest of the menses after they have once existed. This may come from the aforesaid causes. It may be induced by sudden psychic emotion, such as fear or sorrow.

The effect of psychic states on menstruation is very great. Dr. Walsh (Psychotherapy, p. 438) relates that Queen Mary, eldest daughter of Henry VIII, wife of Philip II of Spain, married at about forty, was so anxious to have a child that her mental attitude for a time arrested her menstruation, and led her and the realm to believe that she was enceinte. It turned out to be a "phantom pregnancy." Her mental attitude had not only produced a temporary cessation of the menses, but also a series of symptoms resembling pregnancy.

Pregnant women are physiologically amenorrheic. Normal lactating women menstruate from six weeks to four months after labor, and, as a rule, during this period do not conceive.

Castration produces amenorrhea, provided all the ovarian tissue be removed. If even the hilus of the ovary be left *in situ,* menstruation will continue for a time, but the menopause will be premature. Abnormal adiposity may produce amenorrhea.

Delayed menstruation is often caused by cold resulting from exposure, wet feet, etc. A hot bath is a common efficient remedy. It may be supplemented by hot applications to the genital region and loins.

Various diseases often produce amenorrhea, such as tuberculosis, exophthalmic goiter, diabetes mellitus, nephritis, leukemia, cancer.

Menorrhagia.—This is excessive menstruation. The flow may be excessive in quantity, or the menstrual period may be prolonged, or the intermenstrual period may be too brief. These terms are relative. There is considerable physiologic variation in the quantity and duration of the flow and in the periodicity. Therefore all these facts must be weighed in their relation to the definite individual. Sometimes the flow is a veritable hemorrhage, soaking the napkins and even permeating the clothing or the bed-clothes. "The average normal woman of clean habits uses three or four napkins a day, the total number for the period averaging twelve or sixteen. If more than this are used, menorrhagia is suspected." (Graves)

"Menorrhagia during the first decade following puberty is not uncommon, and may be very severe and intractable." (Graves) The causes are obscure. Youthful menorrhagia may be caused by masturbation. Malformation of the uterus is also assigned as a general cause. In most cases menorrhagia is caused by uterine myomata: all myomata of whatsoever kind have a tendency to produce excessive bleeding. See the chapter on uterine myomata.

Dysmenorrhea.—Etymologically dysmenorrhea means difficult or painful menstruation. The physiologic function of menstruation should be painless, but in our age and country it is rarely so. Slight discomfort may be disregarded. At times the pains are cramp-like and severe, indicating a serious organic or functional disturbance. Many causes give rise to dysmenorrhea. Malposition of the uterus will cause it; catarrh of the

womb causing clotting of the menstrual blood is a cause; uterine myomata are a sure cause; hypoplasia or defective formation of the organs of the genital tract is also assigned as a cause. Psychoneurosis is not a cause but an effect of dysmenorrhea. It must be admitted that the etiology of dysmenorrhea is often unknown, and its treatment difficult and disappointing. Many cases baffle medical skill and remain a life-burden of the woman. There are cramp-like pains, headache, vomiting, and general malaise. Among the drugs recommended are aspirin, hydrastis, ovarian extracts, atropin, adrenalin, bromids, alcohol. Undoubtedly many cases of dysmenorrhea are caused by atrophy of the mucous membrane of the uterus, and a flabby undeveloped musculature of the same. The weakened uterus is not able to expel the blood; it stagnates, clots, and is finally expelled with pain.

Dysmenorrhea resulting from improper anatomic position may yield to surgery.

Thin, anemic, overworked women often suffer much at their menstrual periods. The treatment should contemplate the repair of the woman's general condition and bodily tone. Constipation should always be relieved.

Ante- and retroflexion of the uterus as well as procidentia and prolapse should receive surgical care at once.

The term "membranous dysmenorrhea denotes a condition in which the menstruation bears away the exfoliated uterine mucosa. The membrane may be torn away intact or more frequently in shreds of tissue. Sometimes the discharge is compounded with early abortion."

This form of dysmenorrhea is usually attended by severe pain. The diagnosis is difficult and uncertain: the prognosis is bad. The usual treatment is curettage with iodin just before the onset of the menstrual period. Hydrastis is sometimes effectively used.

The uterus usually does not reach its full development until several years after puberty. Physiologically puberty is not maturity: the full development of the uterus and of the whole system should precede marriage. Of course a physiologic loss is less than a moral loss: sometimes early marriages must be counseled.

The most favorable time for marriage is from 25 to 40 years in the male; from 20 to 35 years in the female. Children born of early or of late marriages as a rule are not so robust or talented as those begotten of timely marriages. Women who marry after the age of 35 are less liable to bear offspring.

The normal nulligravidus uterus is pear-shaped, from 7 to 8 cm. long, 4 cm. wide and 2½ cm. thick. It weighs from 40 to 50 gm. Gestation increases its permanent size about 1 cm. in every dimension and adds about 20 gm. to its weight. During actual pregnancy the walls of the uterus thicken and the organ is enormously enlarged; the blood supply is increased; the lymphatics enlarge and multiply.

The nervous supply of the uterus is abundant from both sympathetic and cerebrospinal systems. If the fetus comes not into his home the perishable provision made for his maintenance is evacuated, and a fresh provision is made for another expectancy.

When the fetus comes into his own, the powers of nature are directed to aliment him, and there is no real menstruation. Bleeding during pregnancy is not a real menstrual flow. Nature is either satisfied with offspring or expectant of offspring throughout the reproductive period of the normal woman's life.

The advent of puberty varies according to environment, climate, race, heredity, condition of life and type of person. The heat of the body hastens the advent of the menses. In hot climes girls generally arrive at puberty at an early age. The author has observed a ten-year-old Sicilian girl in the sixth month of her pregnancy.

In the Journal of the American Association Vilhjalmur Stephansson writes:

"It is not rare among Eskimo women that they have their first child at the age of twelve; and children born before the mothers were eleven have been recorded in places where the age of the mother can be no doubt, because of the fact that her birth had been rcorded by a resident missionary.

"It is a curious thing that during twelve years of association with the Eskimos, during which time I have spoken and written a great deal about their manner of life, it never occurred to me until some two or three months ago that their early maturity is strictly in accord with the supposition that the hotter the environment the earlier the maturity.

"For to all intents and purposes the typical Eskimo in the country known to me lives under tropical or subtropical conditions. During the winter of 1906-1907 I recorded the estimate that the average temperature within the doors of the Eskimo house in which I lived at the mouth of the Mackenzie River was a good deal above 80 F., and frequently rose to 90 F. From the point of view of those who spent most of the winter indoors in that house it was a matter of no consequence that the temperature was perhaps 40 or 50 degrees below zero outdoors, when the outdoor air seldom came in contact with their bodies. Even when they go out this cold air does not have a chance to come in contact with the body, except for the limited area of the face.

"When an Eskimo is well dressed his two layers of fur clothing imprison the body heat so effectively that the air in actual contact with his skin is always at the temperature of a tropical summer. It is true, therefore, that while an Eskimo is indoors his entire body is exposed to a local climate as warm as that of Sicily, and when he is outdoors he carries that climate about with him inside his clothes and applicable to 90 or 95 per cent. of the body area."

Mr. Stephansson says that the Indians have no such means of protection from the cold, and that therefore the more northerly of these mature late.

Vicious habits accelerate puberty: high-strung, full-blooded girls menstruate early and copiously. A low blood supply from whatsoever cause retards menstruation and may entirely check it. This is a wise conservation of nature: the woman has no blood to lose. However considerable cessation of the menses in the normal non-pregnant woman demands medical intervention.

The menstruation of weak, anemic, chlorotic, tuberculous girls is always irregular, scanty, and pale, and may cease for long periods.

Clinical observations seem to show a definite connection between menstruation and disturbances of the thyroid gland. That there is a relation between the thyroid gland and the genitals seems highly probable, but it is not yet well understood. Goiters are often associated with menstrual disorders: the swelling of the thyroid gland is most apparent during pregnancy.

"The ovaries of the child during the first ten years also show an insignificant growth. The infantile ovary is narrow and slender. Towards puberty there is a rapid development, and the organ assumes a rounder, more oval contour. The dimensions of the mature ovary are 3 to 5 cm. long, 2 to 3 cm. wide, and 1 to 1½ cm. thick.

"In the fetus the tube is twisted into tight convolutions, which straighten out somewhat toward the end of intrauterine life, especially near the isthmus. As the child grows older the tube gradually becomes straighter, so that at puberty there are only moderate convolutions. After child-bearing the tube becomes nearly straight. The twisting of the tube sometimes persists after maturity and is regarded as one of the stigmata of infantilism. It is thought to be one of the causes of sterility and of tubal pregnancy.

"At puberty the secondary sexual characteristics become more pronounced and differentiated from those of the male. Most important of these are the development of the breasts, relative width of the hips, slenderness of the waist, length of the hair of the head, small bony structure, general undulating contour of the body, and absence of body hair, except in the axillae and on the pubes."

"The rapid mammary development at puberty and the temporary enlargement during menstruation is probably referable to the influence of the ovarian inner secretion (Halban-Schroeder)." (Graves)

The flattened pear-shaped nulliparous uterus changes during pregnancy to a gourd-shaped organ: its capacity increases from 2 c. c. to 400 c. c. and upwards. The cervix softens and produces a thick tenacious plug of mucus constantly renewed from above. It closes the lumen of the cervix preventing ascending infection. The softening of the cervix is the famous pregnancy sign of Hegar.

During menstruation there is an increased hyperemia of the skin, most apparent in the skin of the cheeks, breasts, and external genitals. During the flow this hyperemia gives place to a pallor.

Eruptions, *menstrual exanthemata,* often appear on the face, breasts, abdomen, and on other parts.

An inflammatory skin disease characterized by the formation of small vesicles in clusters may arise. This is called *herpes menstrualis.* Genital herpes is seen frequently in prostitutes.

Acne ephebica is a common manifestation of puberty, more frequent in boys. It is an inflammation of the sebaceous glands. Pustules, or small pink papules sometimes with black centers appear most frequently on face, back, and chest.

Furuncles or boils sometimes appear especially on the external genitals.

There is a physiologic increase of pigment, especially observable in the skin of the external genitals, about the nipples, and along the linea alba.

The advent of puberty is often attended by nose-bleed.

The secretory and motor activity of the stomach undergo a premenstrual and menstrual alteration. Many women have need of a laxative during menstruation. Loss of appetite, flatulence, nausea, vomiting, bad breath, pains in the stomach are common. Obstipation and diarrhea often attend on menstruation.

During the period immediately preceding menstruation there is usually a considerable increase in the red corpuscles of the blood.

Chlorosis or *green sickness* is an anemia mostly affecting girls about the age of puberty: the usual cause is deficiency of the hemoglobin, but in severe cases the red corpuscles may fail also. Chlorosis is sometimes related to genital hypoplasia or lack of genital development, but not in the majority of cases.

Chlorosis usually delays the menarche and causes irregular and scanty menstruation, and often amenorrhea.

The female heart and blood-vessels are smaller and weaker than those of the man.

The woman has greater vasomotor excitability, and lower blood pressure. At puberty the female heart increases in size. Functional irregularities of the heart often attend on the menses.

Hyperthyroidism is occasionally an attendant ill.

Severe cardiac ills often result from coitus interruptus, condoms and other vaginal contraceptives.

Varicose veins are far more common in women than in men. They are often found in pregnancy owing to the weight of the gravid uterus. They usually disappear after pregnancy, but the stretching of the veins weakens their walls, and predisposes them to permanent varicosities. De Lee denies that varicosities are caused by the additional weight of the gravid uterus. He assigns no definite cause.

In nearly all pregnancies there is some distention of the surface veins; but marked varicosities appear in about 20 per cent. The usual sites are the legs, the vulva, the mons, the pelvis, the rectum, the anus, the vagina, the abdomen, the buttocks in the order named. Hemorrhoids often accompany them. In severe cases of varicose veins of the legs it is advisable to keep the woman in a recumbent position with the feet elevated. The legs should be bandaged with flannel, or adhesive strips should be wound spirally around the legs.

Of course coitus is contraindicated.

Some psychic disturbance is the ordinary law of the menstruating woman. All her psychical and mental defects are intensified at this phase.

Sexual feeling is intensified immediately before and immediately after the menstrual flow. Even the pure woman whose libido is not yet awakened will feel a vague restlessness, an ennui, an indefinable yearning. At this period also the temptation to self-abuse is strongest.

"At the time of the menarche the sexual impulse, which has hitherto been dormant, becomes strongly developed. It is evoked at this time of life by the anatomico-physiological changes undergone by the reproductive glands; the stimulus aroused by these processes in the ovary, being conducted to the brain, awakens passion. At the same time the observation of the growth of the hairy covering on the genital organs, the development of the breasts, and the appearance of menstruation, tend to arouse erotic presentiments. The reading of romances, conversations with female friends, and observation of the conduct of full-grown persons, convert these presentiments into clear ideas, and excite the impulse to the production of passionate sexual sensations, the sexual impulse. How far these stimuli arising from the reproductive apparatus are encouraged and accentuated, on the one hand, or repressed and diminished, on the other, depends on external impressions of various kinds. The environment is the determinant for the further transformation of the as yet undifferentiated sexual impulse into the fully-developed copulative and reproductive impulses." (Kisch, op. cit.)

"Chastity is possible only when the mode of life is simple and regular, and is characterized by appropriate self-command and frugality. For this reason it is rarely encountered in palaces and similar places, in which from youth onward every one may do what he pleases; but just as little is it really practicable amid conditions of lack of culture, rudeness, and poverty." (Oesterlen quoted by Kisch, op. cit.)

"In the ordinary course of nature the young woman at the time of the first appearance of menstruation is still in full possession of those amiable qualities of blamelessness and chastity which we are accustomed to denote by the term *moral virginity*.

"To an honorable and pure-minded man this beautiful attribute of budding womanhood is much dearer and more estimable than physical virginity. By libertines only is the latter regarded as a most valuable possession, since it furnishes a powerful stimulus to their jaded imaginations. But moral virginity and physical virginity are not always and necessarily associated, for either can be present in the absence of the other. Physical virginity may be destroyed by divers forms of violence, and yet moral virginity may remain pure and uninjured amidst its ruins. Thus the two are widely different one from the other, widely different also are they in value and significance." (Moreau, quoted by Kisch, op. cit.)

"What is needed is the control of educational influences with these ends in view, that, on the one hand, the sexual excitability of developing youth shall be diminished and kept within bounds, and that nevertheless, on the other, the urgently needed enlightenment shall be afforded to the young people at the proper time and in a suitable form. How these aims

are to be effected cannot be explained in generally applicable propositions. It is a matter which must be left to the tact of the parents and of other members of the family, who will be guided by the insight they have acquired into the mental life of those concerned. * * * Children inclined to onanism must be carefully supervised by day and by night; they must be protected from all stimulating things and from bad company; in boarding-schools it is the common dormitories that require the most strict, most careful, and most continuous control. In the case of auto-onanists, female as well as male, we must inquire into the possible existence of local stimulating influences, among which, in both sexes, oxyuris must be mentioned —but in truth it is rare for such local conditions to be the exciting cause of masturbation. A healthy mode of life in respect of clothing, sleep, and diet, and the systematic practice of bodily exercises to the point of considerable fatigue, are the most effectual means of counteracting the noxious propensity to onanism." (Eulenburg, quoted by Kisch, op. cit.)

According to Catholic moralists physical virginity in woman is lost by a voluntary coitus. In man it is lost by a voluntary cooperation in the ejaculation of semen.

Moral virginity is lost by a free consent to an act inconsistent with chastity. The liturgical classification of Saints and their cult is based on this distinction.

It is a wise human convention, and as such the wisest possible. That it is not absolute is evident from many proofs.

(1). The *integritas carnis* may be congenitally absent, or may result from disease.

(2). A woman deflowered by violence or a man abused by violence is classed as a virgin. Both may enter the religious state in the Church. If such a woman should enter the religious state and become a recognized saint, she would be classed as a virgin. Of course the defloration must be secret.

(3). Moreover even a woman who has had voluntary secret sexual intercourse, may, if converted, consecrate her life to virginity in religion.

As authorities for this teaching we may cite Lessius (De Just. et Jure, Lib. IV. 2.), Ballerini-Palmieri (Vol. II, Parag. 142.) If she acquired great sanctity, and thereby canonization, she would be in the ranks of the virgins.

What applies to one sex applies to another.

By her conversion she would not regain her physical integrity of the flesh, but by her true repentance, she would acquire moral virginity. When corruption shall put on incorruption no taint shall remain of her sin.

Therefore penitents who are depressed by the persuasion that the loss of virginity be irreparable are to be consoled by the true teaching that whatever is lost by sin may be regained by repentance. The physical effects in the woman remain only in the corrupted flesh. Hence the penitent sinful woman may aim at the highest rank.

THE MENOPAUSE

"The duration of menstrual life is usually between thirty and thirty-five years." (Graves)

The cessation of the menses is called the *Menopause,* or *change of life,* or the *climacteric.*

Removal of the ovaries effects the cessation of menstruation at any age.

Early puberty as a rule results in late menopause: this type of woman menstruates profusely, and is liable to myomata.

Generous nourishment and freedom from hardships generally prolong menstrual life. Statistics compiled out of 2291 cases show a menopause at 46-50 in 41 per cent.; a menopause at 41-45 in 26 per cent.; a menopause at 51-55 in 15 per cent.; a menopause at 36-40 in 12 per cent.

"At times we may observe a remarkable extension of fertility beyond the average age, that is, beyond the age of fifty years.

"In northern Europe pregnancy at a comparatively advanced age is by no means rare. From the official statistics of Denmark we learn that among 10,000 women, 465 were delivered at ages between 50 and 55 years. In Sweden, of 10,000 mothers, 300 gave birth to children when more than 50 years of age. In Ireland, the proportion of mothers over 50 years was 345 per 10,000. In England the official figures dealing with the delivery of 483,613 women, showed that 7,022 were between 45 and 50 years of age, and 167 over 50 years of age.

"The ideal of fertility in women is that the first completed act of sexual interourse should be followed immediately by conception, that the pregnancy should terminate after the normal lapse of time in the birth of a child, and that the same process should be repeated at intervals of about ten months until the end of active sexual life. In actual experience, however, this never occurs. Fertilization as an immediate consequence of the first act of sexual intercourse (which in the lower animals is regarded as a rule) is a very rare occurrence in human beings. Moreover, in no single marriage is the reproductive capacity of the wife utilized to the full, up to the time of extinction of her generative faculty; either because the potency of the male partner undergoes a gradual decline, or, it may be, because, after a while, sexual intercourse becomes less frequent, or because precautions against procreation are taken." (Kisch, op. cit.)

Isolated cases of precocious menstruation and of menopause after 55 are rare. Pregnancy after the age of 45 is rare, but possible. In the vital statistics of Little Rock, Arkansas, it is recorded that in September, 1923, Dr. C. A. de Valise Towne gave birth to healthy twins. Dr. Towne's age is recorded as 52, and the age of her husband as 75.

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Krieger (Die Menstruation, Berlin, 1869) cites a case of menses at twenty; first child at forty-seven; seven children born; menopause at sixty; menstruation established again at seventy-five, continuing until ninety-eight, regular periods; menstruation again ceases for five years, but reappears at one hundred and four: further report is wanting.

On the authority of Charpentier quoted by Parvin, De Lee reports a case of menopause at forty-eight and recurrence of menses at sixty, then continuing for two years.

Recurrence of menstruation after the menopause in rare cases seems to be proven.

Nevertheless a flow of blood from the female genitalia after the menopause is usually a sign of pathologic conditions, usually of myomata.

Rare cases of pregnancy have been recorded after the menopause.

"I have seen a woman of 51 who had not seen her sickness for three years pregnant. She quite frankly confessed, she was a widow, that she had thought herself perfectly safe, but she was now suing for the support of her child." (Jas. J. Walsh, M. D.)

In the "Transactions of the Obstetrical Society of Edinburgh, 1882, Vol. VII, Kennedy reports the pregnancy of a woman sixty-two years old. It was the woman's twenty-second labor. This is the latest natural pregnancy on record.

De Lee cites a case from Renaudin, where twelve years after the menopause a living child was born.

The menopause arrives earlier in sterile women.

At the advent of the menopause in rare instances menstruation may abruptly cease. Usually it is a slow change in duration extending from several months to several years. There is a progressive diminution of the flow of blood; the intermenstrual periods may be lengthened; the flow is more mucous. A notable increase in the flow is pathologic.

At the menopause all the genital organs atrophy, though in various extent in different women. Senile involution of the internal and external genital organs begins. The uterus becomes shorter, thinner and more flaccid; its musculature becomes weaker; the organ assumes a pale anemic appearance; it is a mere shrunken sac. The mucous membrane becomes thin and smooth, the glandular elements gradually disappear; the cervix shrinks; the uterine cavity diminishes in caliber, it may be partially or completely obstructed; the tubes become shorter; the ovaries shrivel into small bundles of connective tissue without follicles. The folds of the vagina flatten; its vault becomes narrow; its secretion becomes alkaline. The introitus vaginae is much lessened in caliber. The labia majora change their round contour to a flat wrinkled appearance. The labia minora are thinned: they shrink and gradually disappear. The elasticity of the parts is lost.

Slight atrophy of both the internal and external genitals is attendant on lactation: it is not pathologic: in due time nature readjusts itself.

A more severe general atrophy of the aforesaid organs follows castration and certain diseases, such as tuberculosis, chronic nephritis, diabetes, articular rheumatism, diseases of the spinal cord, etc.

The menopause is a crisis in woman's life. Nearly every woman then experiences in greater or less degree constitutional and psychic disturbances. Just before the menopause usually the sexual impulse is intensified. Women are more easily seduced at this epoch: many contract unfit marriages. Women who have not borne children feel at this point a great loneliness and a great craving for children. The disappointed maternal instinct cries out for its object. This is especially true of women who have practised onanism.

In March, 1920, in Milwaukee, Wis., Mrs. Ruth Vail Randall died by her own hand. Her diary reveals the suffering of the unnatural mother:

"I wonder why Norm and I can't get along. Do we need money or a child?

"Last night it came to me suddenly. I wonder if I should have kept the child God sent me. O, it was such a lovely child and can not come again. I am so much harder and older. God may punish me yet, but I thought we did it for the best. We were starving.

"O God, O God, if you only knew how my heart is breaking, how hungry I am for love. A baby, a baby, my baby—what would that mean to a little girl? It means something to love and care for, something to trust and turn to you for its every need.

"Norm thinks that I am disloyal. That is not it. I have lost something that I feel that I will never know again. In desperation, I, who abhor liquor, am drinking more than I should."

"Among the neuropathic manifestations of the climacteric period we must reckon the at times excessive increase of the sexual impulse. We have already insisted upon the fact that the sexual impulse is not normally extinguished in women at the time of the cessation of menstruation; on the contrary, sexual desire commonly persists long after the menopause, and on this fact is largely dependent the frequency with which elderly women espouse quite young men. But in some cases, the sexual impulse is enormously enhanced during the climacteric period, and the patient experiences paroxysms of intense voluptuous sensation, associated with manifestations of abnormal reflex and psychical reaction, with increased frequency of the pulse and the respiration, emotional excitement, it may be loss of consciousness, and even general convulsions. Some of these cases of disordered sexuality occur in those previously affected with pruritus vulvae et vaginae.

"More particularly Guenceau de Mussy and Boerner have described cases of such excessive libido sexualis during the climacteric period, voluptuous crises with pollutions, occurring independently of any external cause; the women thus affected have a continued succession of erotic ideas, they experience an itching and burning sensation in the genital organs, and from time to time this culminates in a paroxysm of sexual feeling, with orgasm, and increased secretion from the glands of the vulva.

"Boerner has observed that characteristic variations in the libido sexualis commonly occur at the climacteric period. Not infrequently at this time the sexual desire becomes greatly diminished in intensity, or even entirely disappears; more often, however, the desire persists throughout this epoch; finally, in many instances, the desire undergoes an increase, at

times to a degree amounting to positive torment. The first of these changes, the decline in the intensity of the sexual desire, harmonizing as it does with the general extinction of the sexual functions at the change of life, might have been expected to be the normal occurrence. And it is a fact that in many cases characterized by an increase of libido sexualis at the climacteric epoch, Boerner found that there existed anatomical abnormalities in the reproductive organs (fibromata, flexions, etc.). Be this as it may, an increase in the intensity of sexual desire, as long as that increase is not altogether excessive, may be regarded as one manifestation of the visceral hyperaesthesias so general at this time of life. In the excessive degrees of this affection, however, those in which at times the sexual crisis is associated with general convulsions, we must, with Romberg, recognize the existence of a direct neuralgic state of the spermatic plexus. It is especially before the commencement of an actual menstrual period, or before a due period which fails to occur, that during the critical years complaint is made of this state of excessive sexual desire and sensibility; and in many instances the trouble begins at the very first appearance of the menstrual irregularities which foreshadow the menopause." (Kisch, op. cit.)

" 'Mental disorder will be more likely to ensue at the climacteric period in those women whose nervous systems have always been unduly irritable, and in those affected with hereditary predisposition to insanity. Further, it is more likely to occur in those in whom the menopause takes place quite suddenly, in a catastrophic manner, than in those in whom the climacteric proceeds gradually, and unaccompanied by any stormy manifestations in the organism at large.

" 'It is not, in my opinion, possible to recognize any specific form of mental disorder peculiar to the climacteric period, but nevertheless the psychoses occurring at this time of life do exhibit certain striking and characteristic features, more especially in this respect, that states of mental depression with melancholia predominate, while erotic influences are manifest in their etiology. In the slighter forms, volition and ideation are unaffected, and the trouble manifests itself in the form of hypochondriacal moods, associated with bodily troubles. In more severe cases we see emotional depression, states of anxiety, limitation of the powers of conception and judgment, indecisiveness, low-spiritedness, and apathy; or on the other hand, restlessness, an inclination to continued moving about, the eager pursuit of continually varying occupations, loquacity, etc.; finally if the mental disorder becomes still more severe, hallucination, delirium, paroxysms of intense excitement, and in exceptional instances, fully developed mania.

" 'As with regard to the other disorders attending the climacteric, so also in respect of the climacteric psychoses, women who have been, or are married, who have had a reasonable number of children, and have been accustomed to a sufficiency of sexual activity, are more favorably situated, are far more immune, than women whose sexual circumstances have been opposite of those mentioned, who have had one or two children only, who have indulged in intercourse only when protected from pregnancy by the use of preventive measures, or have remained sexually unsatisfied, and,

finally, women who have never married, and those who for many years prior to the commencement of the menopause have lived in chaste widowhood. In old maids, to the somatic effects of sexual abstinence (or in some cases of abnormal sexual gratification), are superadded the effects of the intellectual and emotional recognition of a wasted life. Again, it by no means rarely comes under our observation that women who in youth, at the time of the menarche, suffered from psychical disturbances, are apt once again to be affected with transitory mental disorder at the change of life. Once, however, the menopause is completely at an end, a condition of mental quiescence is, as a rule, established, and then it may happen that previously existent mental disorders undergo amelioration; but on the other hand we have in all cases to reckon with the possibility that they may take an unfavorable turn in the direction of the development of senile psychoses.

" 'Of considerable interest is the fact, first pointed out by Glaevecke, and subsequently confirmed by other observers, that in cases of artificial menopause, melancholic mental disturbances not infrequently follow the operation, in some instances so severe as to lead to weariness of life and actual suicide; and in general, after the artificial induction of the menopause, psychical disturbances are by no means rare, and are sometimes very severe. Such disturbance of the mental balance is seen after oöphorectomy, especially in women who are still comparatively young, and whose sexual powers are still in a ripe state; whereas when the operation is performed in women of a more advanced age, whose ovaries were already nearly or completely functionless, no psychopathic changes are likely to ensue. In women belonging to the former category, the same etiological influences come into operation as in the physiological menopause, the patient, that is, is affected by the psychical influences of the removal of the ovaries—not only by the cessation of menstruation and the disappearance of the internal secretion of the reproductive glands, leading to a disturbance of the physical equilibrium, but also by the intellectual recognition of the loss of sexual potency, and a consequent disturbance of the mental balance.' " (Kowalewski quoted by Kisch, op. cit.)

"In considering the mental condition of women at the outset of the climacteric period, we must not forget those who are called 'old maids'. In their youth these maidens also have had their ideals, their hopes, their plans, and their sorrows. They also had a natural impulse to love and to be loved in return; they hoped to become wives and mothers. But life has failed to fulfil their hopes and their wishes, and their longings have remained unsatisfied. Some of them have taken up their cross without murmuring, and have devoted their talents, their intelligence, and their love to the service of those nearest to them. But others make an active protest against fate in the form of vindictive feelings toward their environment, of quarrelsomeness, scandalmongering, etc. Here we see contrasted the two principal types of such women. On the one hand are those who devote their intellectual and spiritual powers to the service of society; these are unselfish sisters-of-mercy, untiring medical women, invaluable school-teachers and governesses, fanatical political agents, etc. Such as these have ceased to live for themselves. In the fullest sense of the words,

they mortify the flesh, and guide their conduct by lofty moral principles. They have killed their sexual life, and they remain forever virgins—both morally and physically. If, owing to a pathological inheritance, faulty conditions of life, exhausting illness, etc., a psychosis develops, the hallucinations and delusions from which they suffer very rarely assume a sexual character, nor are they of a degrading type. The sexual side of life seems, in fact, be they sane or insane, to have undergone complete atrophy. They suffer from simple melancholia with stupor, or their insanity takes a religious turn, but very rarely indeed has it an erotic character.

"Very different is it with old maids of the second type. They are dissatisfied with life, irritable, quarrelsome, envious, and malicious. They are spiteful and revengeful, gossips and scandalmongers, boast of their own chaste and innocent lives, and never forgive any real or imaginary attempt upon their spotless virtue. At the same time they never lose hope for the future, and are full of imaginary love-affairs, in which they pass through scenes by no means chaste or innocent; they do not shrink from self-abuse and the abnormal gratification of the sexual needs, in which the lacking partner in the sexual acts is supplied by the imagination. Under the influence of such abnormal conditions of life, these women frequently become affected by nervous disorders; migraine, neuralgia, cephalalgia, nervous depression, rachialgia, debility, anaemia, diseases of the reproductive organs, etc. Thus, when they enter the climacteric age, the soil is fully prepared for the development of mental disorder, which in such individuals is often characterized by hallucinations of sexual sensation and perception, erotic visual and auditory hallucinations, delusions of similar character, increased sexual irritability, a search for abnormal means of sexual gratification, a propensity to obscene speech and conduct, etc.

"Mental disorder is so common during the climacteric period, that the term 'climacteric insanity' has now become established in the literature of mental alienation. In almost all the text-books of the subject we find an allusion to this form of mental disease, but there is no real ground for Maudsley's assumption that there is a climacteric insanity *sui generis.* At the climacteric, very various forms of mental disorder may occur—paranoia, melancholia, and mania; the only common features in the attacks, owing to which they are classed as 'climacteric insanity', being the fact that the final determining cause in each case is the onset of the change of life. In fact this period is not without influence upon the manifestation of the disease—its stamp is imprinted upon the clinical picture, it endues the disease with certain characteristic features—but still, the peculiarities common to the cases of mental disorder occurring at this time of life in women are not so great as to justify us in describing them as a separate variety of psychosis." (Kisch, op. cit.)

"Much more frequent during the climacteric period is the occurrence of paranoia, as Kowalewski rightly insists. It is most often met with in "old maids" with psychopathic predisposition. The imagination of such individuals is always concentrated upon men; they imagine that men in general, but more particularly certain individuals of the opposite sex, are continually regarding them, making eyes at them, making signs to them, in some way or other striving to attract their attention. The most ordi-

nary and invariable forms of polite intercourse are regarded by these women, whose powers of observation are morbidly stimulated, as being indications of a special 'attention' paid to themselves. They persecute these men with their own attentions, and imagine that it is the men who are persecuting them. Often this morbid mental state is associated with sexual malpractices, masturbation, etc.

"Not rarely, such degenerates are affected with lascivious dreams. Often they experience hallucinations of sexual perception in the form of supposed assaults on their virginity. All these states are apt speedily to develop into a condition of general suspiciousness and ideas of persecution. The ideas of persecution assume a peculiar form, one especially characteristic of the climacteric period. The patients believe that a man, often personally unknown to them, and perhaps living in another town, enters into spiritual and bodily intercourse with them. These relations are supposed to be effected in most cases by means of spiritualism, hypnotism, or electricity. The patient importunes the man in question with letters, supposes herself to be legally united with him, and not infrequently wishes to give him the pleasure of paying her bills and providing her with money. It is a very common occurrence for a Catholic priest to be worried by such a woman, her delusion being grounded upon the fact that the priest is supposed to assume an exceptionally intimate spiritual relationship with members of his flock. The patient with ideas of persecution often herself becomes an actual persecutor, not only pestering her victim with innumerable letters, but in her jealousy making 'scenes' whenever she can encounter him, and sometimes giving rise to serious scandal. With such a mental state we often see associated sexual hallucinations and delusions; the patient believes herself to be pregnant, imagines herself to have been violated, or to be living in carnal intercourse with a man—some one, it may be, with whom she is not even acquainted. Medical men are especially apt to suffer from the accusations of such women, whom they may have examined in private in entire ignorance of the patient's mental condition. Frequently, such ideas of sexual persecution are associated with paroxysms of violent nymphomania, and in this way also the unwary physician may find himself placed in an extremely unpleasant position. It occasionally happens in such patients that abnormalities of the sexual instinct arise, and they begin to feel desire toward individuals of their own sex.

"Such delusions of persecution by means of hypnotism, spiritualism, the telephone, etc., in association with sexual delusions and nymphomania, are so frequent during the climacteric period, that they may be regarded as preeminently constituting climacteric insanity. Frequently some old hysterical state underlies this form of mental disorder.

"Thus these peculiar manifestations of eroticism must be regarded as the distinctive characteristics of climacteric insanity and more particularly of climacteric paranoia. A second characteristic of climacteric insanity is, according to Garat, the marked development of jealous emotions and delusions.

"In addition to these fully developed psychoses, there occur in degenerates at the climacteric age paroxysms of impulsive insanity in the form of dipsomania, kleptomania, pyromania; exhibitionism; irresistible impulse to suicide, homicide, infanticide, etc. Such paroxysmal impulsive manifestations are, according to Kowalewski, commonly associated with menstrual disturbances; they occur most frequently at the due dates of menstruation when the flow fails to appear." (Kisch, op cit.)

After the menopause most women undergo a complete change of temperament. The sexual impulse diminishes. Often the atrophy of the genitalia renders coitus disagreeable and even painful. The general atrophy may cause a shrinking and narrowing of the vaginal introitus. In fact a complete atresia of the canal may result. This would interrupt the drainage of the uterus. The retarded secretions may become very irritating and infectious. Coitus is painful or impossible. Relief must be sought in surgical dilation of the canal or other surgical measures in more obstinate cases.

The ovaries have two functions: Ovulation and internal secretion; both functions cease at the menopause. The suppression of the internal secretion induces a great change in the feminine nature. Though the menopause is physiologic, it is often preceded, attended and followed by constitutional and psychic disturbances. The woman may suffer hot flushes, palpitation, dizziness, nervous depression and irritability hyperexcitability, loss of vasomotor control, hysteria, various forms of neuroses, and of psychoses. The body takes on fat; much of the feminine emotionality disappears: masculine peculiarities may appear.

"We learn from these figures that it is between the ages of 40 and 50 years that there is the greatest tendency in woman for the accumulation of fat; but that as early as between the ages of 30 and 40 years this accumulation may in many instances begin. Speaking generally, there is in women an obvious connection between the development of obesity and the state of the reproductive functions, inasmuch as at puberty, during the puerperium, and above all at the climacteric, there is a special tendency to the accumulation of fat in the subcutaneous tissues. At the commencement of the menopause it is more especially in the abdominal wall, the breasts, and the buttocks, that we witness the deposit of fat. In the abdomen, owing to thickening of the subcutaneous tissues and of the great peritoneal folds—especially of the great omentum—a marked protrusion occurs, whilst the umbilicus becomes more deely hollowed, and ultimately funnel-shaped. In some instances, the deposit of fat around the navel favors the occurrence of umbilical hernia. After an artificial menopause, induced by oöphorectomy, it has also been noticed in from 42 to 52 per cent. of the cases that a marked general deposit of fat has occurred, affecting especially the breasts and the buttocks.

"This obesity in climacteric women, not only impairs to a serious extent their good looks, but brings in its train a number of troubles, and gives rise to manifold morbid manifestations, and among these, changes in the heart, which may readily threaten the patient's life. In consequence of extensive fatty deposits in the myocardium, associated with actual fatty degeneration of the muscular fibres, cardiac insufficiency ensues, with all

its distressing and disastrous consequences. It is further necessary to insist upon the fact that obesity during the climacteric very definitely favors the occurrence of menorrhagia." (Kisch, op. cit.)

The consciousness of approaching old age and of the loss of physical attractiveness are prone to fill the woman with discontent and despondency. This will not have place in the mothers of large happy families, nor in the religious, whose world is heaven. They who suffer most are those who have led empty lives, or who have defrauded nature.

Save in the cases of organic lesion surgery has no place in the menopause: the field of drugs is restricted. Psychotherapy is the best remedy. The patient must be persuaded of the dawn of a placid freer life beyond the climacteric. The woman who has passed this crisis is free from many impediments. In this period she often accomplishes some of her best work. The words of Shakespeare may be quoted:

"Thou know'st 'tis common; all that lives must die."

The menopause is common to woman: she should cheerfully accept her destiny. Her mind must be drawn to healthful open air diversions, to cheerful companionship, to useful service, and to the consolations of religion. A governor of Texas was a woman past middle life. Brooding, seclusion, imaginary fears are the evils that beset this period.

Women must realize that the menopause is a normal physiological process, a milestone in life's journey, an entrance into the mature era of life, in which life's purpose may still be accomplished.

The menopause is, in a sense, sexual death. The sexual impulse may flare up at the advent of the menopause, but it is a passing effect: as Pietro Balestra's beautiful piece of statuary represents it, "Chronos carries off Beauty", while helpless Cupid sorrowfully stands by.

The woman may struggle against the invader; she may color her hair, she may affect a youthful demeanor, but it is vain: the lemon has been squeezed dry: the skin remains. After the menopause Madame is an old woman.

The mean duration of the climacteric transition is from two to three years. The woman is generally irritable, often constipated, lonely, melancholic.

The French woman expressed the feelings of her sex when looking backward from the menopause she declared:

"Formerly, when I was a woman."

The woman suffers headache, fugitive sensations of heat, digestive disturbances, profuse perspiration. In the most favorable mode of cessation of menstruation the duration of the internenstrual interval gradually increases: the flow in like manner decreases in amount until it ceases altogether.

The menopause is subject to great variations. Sometimes after cessation of menstruation, the flow recurs and may continue for a considerable interval. In some women an alternation of profuse and scanty flow occurs at irregular intervals: other women flow continuously through the transition period.

Even under the most favorable conditions, there will be a disturbance of the woman's mental and physical equilibrium.

DISORDERS OF THE SEXUAL FUNCTIONS

Few boys grow to manhood without experiencing the activity of their sexual organs. The boy's own curiosity, his play, his association with other boys, often the degenerate action of older girls, or the bad influence of unchaste adult men are dangers against which careful teaching, good breeding, and vigilance are often unavailing. The boy does not suddenly awake to find himself a man: he grows into it. Though the sexual organs do not function till puberty, there is sexual feeling long before that time. These sensations are pleasurable and they entice to the thoughts and actions which produce them.

Freud seems to be right in maintaining that sex is born with us:

"It seems certain, he says, that the newborn child brings with it the germs of sexual feelings, which continue to develop for some time and then succumb to a progressive suppression, which is, in turn, broken through by the proper advance of sexual development and which can be checked by individual idiosyncrasies."

"The first sexual feelings and manifestations of the child are of an autoerotic character. Every child if unrestrained will play with its genitals."

The sex instinct is not congenitally differentiated. By evil counsels and evil habits any child may develop into a sexual pervert.

The degree of sexual power is congenitally diverse; the higher degree offers itself more readily to sexual perversion.

Sometimes children hold back the evacuations of the bowels and of the bladder and find a pleasure in the discomfort. This perverse habit may persist in adult life. In confession they accuse themselves of having "held" themselves. The normal child develops a proper moral sense and conduct by repression and control of the primal instincts. The child is not born with moral or aesthetic principles: he develops into a normal being by education. Atavistic traits are an aid or a hindrance to proper moral development according to their nature.

The boy feels his masculinity and glories in it. Modesty in him is much less evolved than in the girl. Fear of lacking in masculinity will often move the boy to vicious acts in the mistaken persuasion that they develop his manhood. It is a common practice of boys to retract the foreskin. This naturally causes pleasurable sexual emotion. The boy glories in his sexual knowledge, especially if he has picked it up from vicious sources. There are few things harder for a boy to bear than to be laughed at because he is charged with being ignorant of sexual matters. Nature itself seems to join his foes.

As puberty is reached the sexual secretory system becomes charged and exerts a tension. Its discharge by the normal seminal emission disturbs the youth who is not fully acquainted with the laws of nature. Memories of the sexual dreams linger and arouse passion. The debased press, the licentious theatre, and the immodest dress of woman conspire to tempt the adolescent boy. Society seems to act on the principle that there is no such being as a modest man.

Constant vigilance therefore and intelligent care are required to bring a boy safely through what Jerome calls the *slippery* age of adolescence.

Physicians agree in declaring that the large majority of boys acquire the habit of self-abuse at some time. But the unnatural habit is not confined to boys and men. Some eminent physicians believe that masturbation is more common in women than in men. While others equally eminent deny this, it is admitted by all that it is a *common practice* in women. Positive statistics are impossible.

Metchnikoff (The Nature of Man, Eng. Tr., p. 96), Lawson Tait, Spitzka, Dana, and Löwenfeld (The Sexual Life and Nervous Disorders, 4th Ed., p. 114) declare masturbation to be less common among women. Albert Eulenburg also inclines to this opinion.

Rohleder, Berger, and Havelock Ellis hold it to be more common. Iwan Block holds both sexes equally guilty.

It seems certain that psychical onanism is more common among women.

Among the Roman Catholics the percentage of female masturbation is far less than the male. From an experience extending over many years in different countries and among different races, and in various regions in our own Country, the author has found that the ratio of female masturbation to male is less than one to twenty-five.

"When one examines the sexual life of any person, one finds that at some period of his life every individual resorts to autoerotic sexual outlets in the form of masturbation. All authors agree that the overwhelming majority of boys masturbate at some period of their lives, and some hold the same to be true of girls. Thus Havelock Ellis and Moll define masturbation in the narrow sense a process by which the hands are used to excite one's self sexually; and in the broader sense they apply it to all cases wherein friction is used by the individual on himself for sexual purposes. Concerning the universality they say: 'Masturbation in the broader sense is an almost universal manifestation in animals and all human beings of all lands. It is so widespread that, strictly speaking, we cannot call it abnormal.' These statements express the opinions of most sexologists. The statistics given by authors are usually very high. They all agree that the great majority of boys masturbate; some maintain that it is almost as high as 100 per cent., others give lower figures. My own findings agree with the former. I found few men who have not masturbated, although I cannot maintain the same percentage for women. According to Moll and others, one occasionally meets some healthy sexually normal men who claim not to have masturbated. Other authors, however, maintain that such persons are, as a rule, of a weak sexual constitution in the first place. Out of many hundreds of cases I found few men who seemingly never

masturbated, and these all evinced an abnormally weak sexual make-up. Thus one of these men, a professional man of thirty-eight years, assured me that he never masturbated and rarely experienced any feelings of sex. As far as I could discover in one interview he was practically a-sexual in his emotions. He consulted many physicians about the advisability of marrying, as he himself had no real urge to do so. The others were of the same type. Moreover, it is not always proper to judge by mere answers. Many deny masturbation because of shame or fear, while still others do not know that they have been masturbating. This is especially true of women who masturbate through friction of the thighs or erotic fancies. In analyzing persons it is not rare to find that some deny masturbation for months, only to admit it later. One of my patients admitted having masturbated for years after she had denied it for over six months.

"Many observers maintain that girls masturbate less frequently than boys, while others state that it is just as common or even more common among girls. Guttceit, basing his statement on a thirty years' experience, assumed that almost all girls masturbate who attain the age of eighteen or twenty without any opportunity for sexual intercourse. Rohleder asserts that after puberty girls masturbate more frequently than boys. Among one hundred women, he found ninety-five masturbators.

"Concerning its causes, all authors agree that any external irritation of the genitals, such as pin worms or tight clothes, may bring about masturbation in children. Servants often initiate it in their charges at a very early age. Some are taught to masturbate by other usually older boys, while over 50 per cent. of my cases started it without any outside interference, after such innocent activities as climbing up or sliding down a pole, leaning against a chair, cleansing the parts, etc. Some boys and girls began to masturbate while reading. Such reading was not necessarily of an erotic nature; many boys were stimulated to masturbation by reading about brutal acts such as are depicted in Uncle Tom's Cabin, and girls often resorted to masturbation after reading masochistic or sadistic scenes. Judging by the many peculiar causes of a physical and psychic nature given by the patients themselves it would seem that there is no way of guarding against it.

"It is also well known that there is an infantile masturbation, which some claim is almost universal, while others maintain that it is only common. Be that as it may, there comes a time in the life of every individual when the sexual feelings become manifest, and as he is not able to gratify them, he usually resorts to some form of masturbation." (Brill)

"Onanism as a manner of satisfying the sexual instinct is very widely spread. It is practised by almost every young man when he becomes pubescent, so that one might be tempted to look upon onanism as a physiological act; and this so much the more when we realize how eagerly monkeys and other animals practice it." (Vecki: Sexual Impotence)

By masturbation is meant the wilful excitement of the sexual organs to produce venereal pleasure by any means save the natural union of the sexes.

The French usage is to employ the term Onanism to describe the vice of masturbation. This terminology is also quite extensively used by other

nations. Onanism more properly is coitus interruptus, of which Onan is charged in the Bible, but we must now adjust ourselves to the prevailing terminology. By the generic term Onanism therefore may be indicated the unnatural full gratification of sexual passion.

If the means employed be the unnatural use of the body of one of the same sex or the unnatural use of the body of one of the opposite sex the crime is called sodomy. The "coitus in ano" is therefore sodomitical, as is also the more horrible crime of unnatural gratification by means of the mouth.

Sodomy is defined by St. Thomas:

"Concubitus ad non debitum sexum, puta masculi ad masculum, vel feminae ad feminam." Theologians accept the aforesaid definition for perfect sodomy, but they associate therewith imperfect sodomy, which is sexual intercourse with a person of the opposite sex in an unnatural manner, that is, not in the vagina. Both kinds of sodomy are inconsummate or consummate accordingly as orgasm is not arrived at or is consummated. Consummate sodomy may have place between women, if the horrid act be continued to produce the female orgasm.

The female orgasm does not change the specific character of the act, and therefore, is not to be confessed. The complete delectation, however, is to be confessed.

The essential malice of sodomy consists in the violation of nature's law touching the sexes and the organs of the sexes.

Sodomy is a mortal sin graver than simple masturbation: it is a graver violation of nature, and it includes the complicity in another's crime or, in case of assault, the violation of another's right. St. Thomas (II, II, 154, 12) gives us his weighty authority and corroborates it by the authority of St. Augustine:

"Just as the ordering of right reason proceeds from man, so the order of nature is from God Himself: wherefore in sins contrary to nature, whereby the very order of nature is violated, an injury is done to God, the Author of nature. Hence Augustine says (*Conf. iii.* 8):

" 'Those foul offences that are against nature should be everywhere and at all times detested and punished, such as were those of the people of Sodom, which should all nations commit, they should all stand guilty of the same crime, by the law of God, which hath not so made men that they should so abuse one another. For even that very intercourse which should be between God and us is violated, when that same nature, of which He is the Author, is polluted by the perversity of lust.' "

Canonical sodomy is perfect consummate coitus in ano inter mares. Hence Canons 2357 and 2359 contemplate such act.

If sodomy is a reserved sin, only this act falls under the reservation.

This is a mere legal classification: it aims not to establish the degree of malice of the acts.

Males who mutually masturbate each other with their hands are declared not to commit sodomy.

A *concubitus*, however, between persons of the same sex using any part of the body is sodomy. The mode therefore needs not be specified in confession. But since consummate sodomy, whether perfect or imperfect,

differs from inconsummate sodomy this circumstance is a matter of confession.

Concubitus non datur nisi membrum genitale saltem unius applicetur corpori alterius, sive in vase praepostero sive inter crura vel brachia vel alibi: non sufficit ut unus manu, pede, brachio tangat alterius genitalia et ab hoc vicissim tangatur. Tamen concubitus inter marem et feminam non est sodomiticus nisi fiat in vase praepostero; secus fornicatio in affectu, cum vel sine pollutione in effectu.

Therefore a concubitus of a female with a female, or of a male with a male is sodomy if the genital organs be applied to any part of the accomplice's body *per modum concubitus.* But the application of the hand, foot, or mouth of one principal to the genitalia of the other, even effecting intentional orgasm, is not classified sodomy. The reason of this distinction is that a concubitus denotes an affectus ad sexum indebitum vel ad vas indebitum.

Sexologists give a specific name to the horrible crime of sexual abuse by means of applying the tongue to the vulva. Such monsters are called *cunnilinguists.* They may be male or female.

Fellatio is the taking of the penis into the mouth. Sometimes a mutual cunnilinctus and fellatio may be operated at the same time.

A more usual sin is pederasty, i. e., sexual intercourse with boys in the anus. When the coitus in ano is practised with women Krafft-Ebing calls it *paedicatio mulierum.*

Sapphism, Lesbian love, and Tribadism are different names of homosexual perversion among women. They are all species of sodomy.

A solid theological opinion exempts a husband from grave sin who prepares for the natural conjugal act by inchoate coitus in ano, or even by tactus mulieris genitalium quovis modo: what is said of the husband applies to the wife. Even fellatio ordinata ad actum conjugalem perficiendum non esset gravis culpa. But there must be a mens conjugalis; the delight must be referred to the proper contemplated act. The preparatory act must not expose the actors to the danger of an orgasm outside of the natural use of the woman.

I would go even farther in this permission. If the aforesaid preparatory acts have a reasonable cause, there seems no good ground for charging the actors with any sin. I have known an elderly man who was married to a young woman to be incapable of coitus nisi uxoris genitalia complexus osculatusque ad actum conjugalem se accingeret. This man was clearly within his rights.

No person may delight in a sodomitic act. In this case the motivation of the act is the lawful union of the sexes. The preparatory act is only used as a foment of lawful conjugal love.

Theologians contemplate the case in which a wife is forced to submit to a real sodomitic abuse of her body. In no case may she formally cooperate. She may never delight in the act. She is bound to resist up to the point of incurring a very grave punishment. The woman who prefers death to such dishonor honors her sex. There is never a case in which a woman is obliged to submit to sodomy. My own opinion is that she is bound sub gravi to resist even to death. Surely every theologian would

compel a boy to die rather than unwillingly to submit to pederasty. Because it is an act intrinsically evil. There appears no good reason to exempt a wife from an equally intrinsic evil. But theologians teach that an unwilling and resisting wife forced to merely material sodomitic cooperation shall be held guiltless. We can not therefore in practice enforce our opinion beyond the limits of an exhortation to die in defense of the dignity of woman.

Of all forms of sodomy the crime of pederasty is the most common. Those who practise it are called urnings.

The term homosexual is also generically applied to all sexual inverts, or persons whose sexual propensity is directed to a person of the same sex. The normal sex instinct is heterosexual.

In parts of Europe pederasty has become an organized cult. Men of wealth and social standing are addicted to it.

Paragraph 175 of the German Criminal code reads thus:

"Unnatural vice between two persons of the male sex, or between a man and an animal is punishable with imprisonment; it may also be punished with loss of civil rights."

Sapphism is not contemplated by the code because it is rare. Five thousand persons of the Reich signed a petition for the repeal of this statute. Among the petitioners are many prominent men. Such men are Mendel, Iwan Bloch, Magnus Hirschfeld, Gerhart Hauptmann, Eulenburg, Krafft-Ebing, Franz von Liszt, Max Nordau, Pelman, Felix Weingartner, von Schrenck-Notzing. In 1904 2,800 German physicians added their names to the list.

The Satanic spirit of the world is here reflected. Freud is a very active apostle thereof. Von Schrenck-Notzing would abolish the sixth commandment and substitute therefor his false theory of the effects of sexual continence:

"Therefore, the chaste youth should exercise sexual abstinence as long as he is able to restrain the instinct without injury to his health. Should he be in danger, owing to increasing strength of his sexual impulse, of Onanism, of falling a victim to satyriasis, or perverse sexual indulgence, then it becomes the duty of his teacher and his physician to cause indulgence in coitus and, too, to acquaint the neophyte with precautionary measures which will guard against excesses, infection, and the procreation of illegitimate offspring." (Max Hühner, quoting Von Schrenck-Notzing.)

The basis of the appeal is a false sentimentality. The case against the statute is thus presented by Iwan Bloch:

"1. Unnatural vice between men is punished, whereas that between women is left immune. But why should this latter be the case, if we adopt the standpoint (which we have, indeed, seen to be untenable) that homosexual intercourse is in itself vicious and criminal—why should homosexual intercourse between women be less vicious and criminal than homosexual intercourse between men?

"2. The idea 'unnatural vice' is equally absurd and inconsequent, and makes justice in respect of these offenses absolutely impossible. By this term is understood not merely paedication (*inmissio membri in anum*), but also any kind of intercourse between men 'resembling sexual

intercourse'—that is, *coitus in os, coitus inter femora,* even simple *frictio membri*—whilst mutual masturbation and other perverse practices are not punishable.

"3. § 175 does not safeguard any citizen, for the sexual freedom of the individual is not disturbed in any way by the intercourse between two adult men who fully understand what they are doing, nor is the general moral sense injured in any way if the act is not seen by any third person. In the latter respect, however, § 183 of the Criminal Code, which punishes annoyance to the public by improper conduct, already affords sufficient protection.

"4. If § 175 is maintained with especial reference to the existence of professional male unchastity, von Liszt has rightly replied to this contention that the latter form of unchastity can be rendered harmless by a modified reading of § 361b of the Criminal Code, just as the protection of virtue can be safeguarded by other sections of the Code.

"5. The effectiveness of § 175 is extremely limited. According to Hirschfeld ('Annual for Sexual Intermediate Stages,' vol. vi., p. 175), no more than 0.007 per cent. of the existing punishable homosexual practices of the present day are detected and punished. Therefore a few isolated individuals are punished for an offense which thousands of others commit with impunity.

"6. When § 175 of the Criminal Code was drawn up, the lawgivers knew absolutely nothing about the homosexual impulse as an essential outcome of the personality; they merely wished to punish heterosexuals who committed homosexual practices, not to punish genuine homosexuals (cf. Numa Praetorius, 'The Question of the Responsibility of Homosexuals,' published in the *Monthly Review of Criminal Psychology,* edited by G. Aschaffenburg, 1906, p. 561.)

"The worst and most tragic consequence of § 175 is the permanent infamy and social contempt suffered by persons who, without any blame to themselves, have a mode of sexual perception diverging from that of the great majority. The state itself commits a crime when it enrolls in the category of vice and crime a biological phenomenon which has recently been recognized as such even by the Evangelical and Catholic Churches, and has been freed by these Churches from the stigma of immorality. The continuance of the great injustice is the frequent cause of the suicide of homosexuals, especially of such as are men of exceptional spiritual and moral cultivation, and frequently before they have actually indulged in their homosexual impulse, the best proof that we have to do, not with vicious, but with unhappy men, who are unable to bear the misery of being socially despised and unjustly understood by their associates. How many suicides from homosexual grounds occur it is impossible to establish exactly. We can only suspect the cause from certain attendant circumstances. A highly respected literary man writes to me regarding this question of the suicide of homosexuals:

" 'When a fine young fellow, suffering frightfully as a result of his inherited disposition, shoots himself, his family will rather suggest that the cause was a cancer(which he has never had), than they will admit his homosexuality.' Several such cases have come under his notice: 'A bet-

ter cause,' he suggests, 'for the suicide would have been unhappy love, for that is the actual truth.' Zola, speaking of the letters of a homosexual, says that they exhibited 'the most heart-breaking cry of human agony' that he had ever known." (Iwan Bloch, The Sexual Life of Our Time).

It is false that the attitude of the Catholic Church be to defend this materialistic defense of homosexuality. Bloch cites no definite author. If a Catholic Author be found to defend Bloch's theories, such author misrepresents the Catholic Church. Homosexuals are not born: they are made. A person may be endowed by nature with hypersexuality, or with a sexual idiosyncrasy. If the mentality be normal that leaning is within the control of free will. If the person be a mental defective, neither God nor human statute punishes the act of an idiot.

The great mass of pederasts and other sexual perverts are the result of wilful indulgence of vice. Instead of the maudlin sentimentality of our times we need the enforcement of still sterner measures.

Intercourse with a beast is called bestiality. This crime is the nether bound of sexual infamy. It is extremely rare. It seems to be more frequent among women than among men. In a mitigated form it is accomplished when women permit a dog or other brute to lick her genitals.

By the fixed law of nature no progeny is possible from intercourse with a beast.

The sex of the beast is an indifferent circumstance irrelevant in confession.

Though the crime be rare I have found men who have practiced bestiality with hens, hogs, horses, and sheep.

The female may abuse herself by manipulation of the breasts, clitoris, vagina, and womb. Even sexual revery is sometimes sufficient to produce orgasm in woman, and this is also true of men. In fact it is impossible to enumerate the list of means of self-abuse.

"It may be noticed that among non-European races it is among women, and especially among those who are subjected to the excitement of a life professionally devoted to some form of pleasure, that the use of the artificial instruments of autoerotism is chiefly practised. The same is markedly true in Europe. The use of an artificial penis in solitary sexual gratification may be traced down from classic times, and doubtless prevailed in the very earliest human civilization, for such an instrument is said to be represented in old Babylonian sculptures, and it is referred to by Ezekiel (Ch. XVI. v. 17). The Lesbian women are said to have used such instruments, made of ivory or gold with silken stuffs and linen. Aristophanes (Lysistrata, v. 109) speaks of the manufacture by the Milesian women of a leather artificial penis, or olisbos. In the British Museum is a vase representing a hetaira holding such instruments, which, as found at Pompeii, may be seen in the museum at Naples. . . . On the other hand, the use, or rather abuse, of the ordinary objects and implements of daily life in obtaining auto-erotic gratification, among the ordinary population in civilized modern lands, has reached an extraordinary degree of extent and variety. We can only feebly estimate by the occasional resulting mischances which come under the surgeon's hands, because only a certain proportion of such instruments are dangerous. Thus the banana

seems to be widely used for masturbation by women, and appears to be marked out for the purpose by its size and shape; it is, however, innocuous, and never comes under the surgeon's notice; the same may probably be said of the cucumbers and other vegetables more especially used by country and factory girls in masturbation; a lady living near Vichy told Pouillet that she had often heard (and had herself been able to verify the fact) that the young peasant women commonly used turnips, carrots, and beet-roots. . . . There is, however, another class of material objects, widely employed for producing physical auto-erotism, which in the nature of things or unnaturally, may be produced by many of the objects and implements of daily life that do not normally come in direct contact with the sexual organs. Children sometimes, even when scarcely more than infants, produce sexual excitement by friction against the corner of a chair or other piece of furniture, and women sometimes do the same. Guttceit, in Russia, knew women who made a large knot in their chemises to rub against, and mentions a woman who would sit on her naked heel and rub it against her. Girls in France, I am informed, are fond of riding on the *chevaux-de-bois,* or hobby-horses, because of the sexual excitement thus aroused; and that the sexual emotions play a part in the fascination exerted by this form of amusement everywhere is indicated by the ecstatic faces of its devotees. At the temples in some parts of Central India, I am told, swings are hung up in pairs, men and women swinging in these until sexually excited; during the months when the men in these districts have to be away from home the girls put up swings to console themselves for the loss of their husbands." (Havelock Ellis)

Havelock Ellis has here followed Garnier (Onanisme, p. 368): both have mistaken Ezekiel's meaning. The most usual sense of the term fornication in the Old Test. is idolatrous worship. The prophet here means that Israel made male images and adored them.

Children should never be allowed to press their genitals against any object that may excite sexual excitement.

Havelock Ellis lays claim to the invention of the term auto-erotism to denote spontaneous sexual emotion generated in the absence of an external stimulus proceeding directly or indirectly from another person. The field ranges from sexual reveries to sexual self-abuse.

Self-abuse is not restricted to man. Monkeys, horses, goats, ferrets, stags, bears, hyenas, dogs and cats have been observed to masturbate.

Ethnologists declare that the vice is practised among savages and heathen nations.

From observation I know that it is practised by the Arab boys. Lorian declares that it is practised by both sexes in Cochin China. Joest, Christian and others inform us that it is prevalent in Japan. The Japanese women are said to use curious metal balls to excite the vagina.

The use of artificial penes has been practiced in ancient and modern times. These are made of wax, rubber, glass, etc.

Garnier declares that at Paris there is manufactured a phallus of red rubber perfectly imitating the form of the penis. It is sold secretly. It is inflated and filled with a warm liquid which is injected into the vagina at the moment of orgasm.

Sometimes through ignorance of her anatomy the woman introduces the object into the urethra: it may thus slip into the bladder:

"In more recent years the following are a few of the objects found in the vagina or bladder, whence they could only be removed by surgical interference: Pencils, stick of sealing wax, cotton-reels, hair-pins (and in Italy very commonly the bone-pins used in the hair), bodkins, knitting-needles, crochet-needles, needle-cases, compasses, glass stoppers, candles, corks, tumblers, forks, tooth-picks, tooth-brushes, pomade-pots (in a case recorded by Schroeder with a cockchafer inside, a makeshift substitute for the Japanese rin-no-tama), while in one recent English case a full-sized hen's egg was removed from the vagina of a middle-aged married woman. More than nine-tenths of the foreign bodies found in the female bladder or urethra are due to masturbation. The age of the individuals in whom such objects have been found is usually from 17 to 30, but in a few cases they have been found in girls below 14, infrequently in women between 40 and 50; the large objects naturally, are found chiefly in the vagina, and in married women." (Havelock-Ellis)

CERTAIN PRINCIPLES TOUCHING SEXUAL LIFE:

Generative power without the ability to effect coitus is not sufficient to contract a valid marriage. While fecundation is possible without the copula, nevertheless there is wanting that act which in the intent of nature is the cause of generation.

An old man, whose seed is not fertile, and an old woman whose ovaries are atrophied validly contract marriage, if the ability to perform the copula perseveres. This power needs not be exercised.

A man deprived of both testicles may not contract a valid marriage. This is confirmed by the decree of Sixtus V. Formerly such marriages were permitted.

If the principals of a marriage bring into the marriage contract a condition, that in order to avoid offspring, they shall abstain from the copula until nature has become sterile the marriage is invalid through a condition opposed to the nature of marriage.

Impotence following upon a valid marriage annuls not the right to coitus.

A woman who has undergone the removal of womb and all the adnexa validly marries. (Canon 1068, ¶ 3.)

The infertility of the man's seed renders him not impotent, provided he is able to effect coitus. The entire occlusion of the seminal canal, preventing the flow of semen, renders the man impotent. If this state comes upon a valid marriage, it does not remove the right of coitus.

Decency demands that the conjugal embrace shall be in privacy. If the privacy of the act be in imminent danger of being invaded, it is lawful to interrupt the act, even though the semen be wasted.

Coitus is not lawful in a sacred place, but if extraordinary circumstances compel the *conjuges* for a long time to dwell in a sacred place the prohibition is lifted.

In a doubtful marriage the principal who is aware of the substantial doubt loses his right to the use of the marriage, but may acquiesce in

rendering the *debitum* to the principal still in good faith.

Marriage is consummated by the complete act of the male, by which he penetrates the female vagina, even though through senility he may not emit semen.

An artificial immission of the seed of the husband without the copula is not a consummation of marriage.

Vermeersch believes that fecundation has place normally in about one and one-half hour after orgasm. He allows a vaginal douche one hour after coitus.

Any douche with the intent to expel the seed is unlawful at any time, even though the intent be vain.

It is against sound biology to allow a vaginal douche so shortly after coitus. Even though we may grant that a spermatozoon may have glided up into the womb, there would be many remaining which would be washed out and destroyed. Therefore fecundation would be greatly curtailed. Nature sends a vast army of spermatozoa into the vagina, for the course is perilous. Such a sudden douche would destroy a large part of the army.

Such an interval might be verified in some favorable cases; but it is utterly improbable that such short interval be the norm. It may be stated as the minimum period required in a period of time which extends itself to twenty-four hours.

The writer condemns a vaginal douche within ten hours after coitus. A uterine douche seems unlawful within twenty hours thereafter. There is no reason for leniency in this matter; there is no just cause for accelerating the douche.

On the other hand, a woman overcome by violence may use any douche up to the expiration of a period of twenty-four hours: for she has a right to expel the seed before conception be verified.

To render the conjugal right is a grave obligation. To impair the fruition of this right by lack of proper cooperation is also unlawful.

The exercise, however, of the conjugal right is under the restriction of reason. Therefore the right ceases in case of serious illness, excessive frequency, drunkenness, bestiality, sodomy, adultery, Onanism.

By mutual consent the principals, in order to avoid offspring, may await the immune period. One principal may not thus suit the act to that time, if the other principal be unwilling.

The woman sins if she wilfully restrains her sexual power and feeling in a reasonable conjugal embrace.

If in face of gravest danger she yield to a condom-coitus she should as far as possible refrain from any formal cooperation.

It is perfectly lawful to look forward with joyful anticipation to the conjugal embrace. Bucceroni and Vermeersch allow even solitary *actus incompletos venereos* if they may be referred to the lawful conjugal right, as a part of preparation, even though remote.

My own opinion is opposed to this. It seems unduly to extend the realm of sex. It is an occasion of masturbation.

Many married persons masturbate.

The mental act of anticipation is surely lawful, but the handling of the genitalia to arouse sex feeling in a solitary act seems coarse and inde-

cent. Instinctively we should be ashamed of such an act.

But it is alleged that such immediate preparation for coitus is acknowledged to be ethical.

There is a difference. Such stimulation as a prelude to coitus is not solitary: it is an integral part of an act in which the woman ennobles the act. It forms a moral whole with the lawful use of the woman, whereas in the aforementioned solitary self-excitation the moral continuity is broken.

Discourses and readings which would be gravely sinful to the unmarried are allowed to the married, providing they incite not to sins against marriage.

Often scrupulous wives confess that they engaged in immodest discourses with their husbands. They should be properly instructed.

The man may never cooperate with the woman in her use of a pessary, syringe, or other contraceptive instrument. He may not exercise coitus with a woman who has a contraceptive device in her body. It is the man's right and duty to compel the wife to desist from such practices. If contrary to his control she practices conception control, his conjugal right is not taken away.

A wife who is compelled by grave fear, such as the threat of death, is absolved from sin if she permits a condom-coitus, but she is nobler if she dies in defense of her honor.

In 1916 the Sacred Penitentiary declared that a wife should offer the same resistance to a condom-coitus, that a virgin should show to her stuprator. In consideration of human weakness we may exempt from sin a woman who in the face of death unwillingly ceases to resist, but we should not consider her a strong character. Hence our positive exhortation should be: Resist stuprum, sodomy, and condom-coitus even unto death.

A wife may even request the conjugal embrace of a husband who frustrates nature by withdrawing, for the act is natural up to the point of withdrawal. The wife is bound in charity to endeavour to move the man to desist from his onanism; she is never bound to render the marriage due to an incorrigible onanist.

The woman forced to a condom-coitus may not give assent to the act nor delight therein.

It is very difficult for a man to frustrate nature by withdrawing, if the wife be really determined that the act be lawfully performed.

The masturbation of a married person has an additional malice *mutans speciem*. It is an act of injustice, and even if the injustice be condoned, it has still the malice of a violation of the sanctity of marriage.

A bilateral adultery is specifically distinct from an unilateral adultery.

It is a grave sin in a wife to grumble and complain of her pregnancies. Husbands are thus often driven to onanism.

By the bond of marriage the souls of the principals are *de jure* united. Therefore one of the principals may not bestow the love that belongs to the spouse upon a Platonic lover. This is mental adultery.

The violation of chastity in a person held by a private vow of chastity is sacrilege. If two bound by any vows of chastity sin with each other it

is bilateral sacrilege, specifically greater than unilateral sacrilege. The same principles are applicable to sollicitation.

Any violation of chastity committed within one-half hour after Holy Communion is a sacrilege.

Formerly it was held that the sinful emission of the semen in a sacred place was a sacrilege. This no longer has force. Only the public or contemptuous use of the sacred place for unlawful venery violates the holy place.

Consanguinity and affinity are juridically equal in establishing incest.

Sins against justice often attend on sexual sins. Thus rape is specifically greater than fornication. The sin of injustice must be confessed. Thus a parochus sinning with a parishioner, a guardian sinning with his ward, a teacher sinning with his pupil sin against justice.

The malice of masturbation lies in the fact that it violates the order of nature. In masturbation the actor exercises by usurpation an act that belongs to the human species as an incentive to the preservation of the race. Morose delectation is unlawful because it is a participation in the aforesaid act.

Actus imperfecti venerei outside of marriage are unlawful because they are not directed to any just end. All lawful *actus imperfecti* derive their lawfulness from their coordination to *actus perfectos.* The *conjuges* may fondle each other because they may lawfully exercise the conjugal embrace. The *actus imperfectus* is a secondary right based on the primary right.

Male and female masturbation are not in the moral order specifically different.

Masturbation is specifically diversified in the married and the unmarried, and in religious persons. Also the complicity must be confessed if the act be wrought by the conscious act of another.

The quality of the phantasm that excites the libido must be confessed. This phantasm may be bestiality, sodomy, sacrilege, incest, adultery, etc.

A sodomia distinguenda est mutua masturbatio per solos tactus, ad quam tamen affectus sodomiticus accedere potest. (Vermeersch) *In confessione, complicitas manifestanda est.*

There are many sexual perversions which are nameless.

A fornicator or adulterer who, in mercy to the woman, withdraws and wastes the seed sins less grievously than he who perfects the act and exposes the woman to the burden of bastardy offspring.

Touching the gravity of sins against chastity three opinions are recorded.

1. The gravity of a sin against chastity is measured by the degree of its influence upon full sexual gratification. Therefore some sins are grave: others venial.

2. Sins against chastity *ex toto genere* are grave: *haec non admittunt parvitatem materiae.*

To understand the issue a subtle distinction must be made.

A sin is *ex toto genere* grave, when objectively it attacks a high and indivisible good. Thus, for example, unbelief, despair, hatred of God, blasphemy, Simony, perjury, are *ex toto genere* grave.

Sins are said to be *ex genere suo* grave which touch an objective which in its own nature is finite and divisible. In such sins the very object establishes grave and venial degrees of guilt. Thus there is a grave theft and a venial theft. Distraction in worship of God may be grave or venial. Defects in offices of charity to our neighbour may be grave or venial.

But in acts that are *ex toto genere* evil there is always possible a venial degree of guilt, depending upon the subjective participation in the evil object. Thus a man out of curiosity casually glancing at a woman's nudity is reckoned venially to have sinned.

Both opinions are probable, although the trend of theologians is toward the second opinion. In practice all cases would reach the same solution, whether we accept the first or the second opinion.

In practice the judge of sins is not charged with the obligation to apply all these subtleties: his duty is reasonably to judge of the state of the man's soul by the penitent's reasonable manifestation of his sins.

Very few confessions are ideal.

In grave sins the state of life of the penitent is to be confessed, provided it changes the species of the sin. Thus in masturbation if the sinner be a person bound by religious vow of celibacy it must be mentioned. In confession it is advisable always to begin the confession by the declaration of the sinner's state of life, unless it be known to the confessor.

When an accomplice is involved in the sin, the accomplice's state of life must be made known and the circumstance of a sin against justice, if justice has been violated. Thus *stuprum* involves a sin against justice.

An unchaste view is generally not specifically motivated by the object, provided the mind delights not in the desire of the specific object.

Morose delectation bears no obligation of confessing the circumstances of its objects, unless it center with desire upon a particular person. If it leads to a seminal emission such fact should be confessed.

Those who are most infected with unchastity are least able to confess it.

Great prudence, patience, and labor are required in the confessor. The confessor's questionnaire should not be careless or perfunctory: it should be short and adapted to the intelligence of the penitent. The dullest male penitent will understand the meaning if asked, if his seed flowed. Such question is not to be addressed to a woman nor to a boy before puberty.

Merely intellectual contemplations of human anatomy and the processes of the sexual life are fully lawful. Also conditional desires, where the condition would legalize the act, are lawful.

A person, who, without just cause, places an act which *per se* and directly in the ordinary course of nature moves him to orgasm or to a high degree of venereal excitement is guilty of the full malice of such specific sin.

A kiss is *in se* an indifferent act. The intention may make it sinful. If the kiss be imprinted on parts of the body which modesty moves to conceal; or if it be an *osculum columbinum,* an immission of the tongue into the mouth, the presumption is that it is a mortal sin.

As a rule kissing among non-kindred should be discouraged. Modesty is cheapened by such indiscriminate kissing, and the fire of lust is awakened.

Some cases have been observed where boys have arrived at puberty at the age of twelve, but usually it is about the fourteenth year when pubescent changes begin to manifest themselves. All members of his body grow very rapidly, his voice changes into a manly tone, hair appears on his face, in the axillae, and in the genito-anal region, the testes grow rapidly to about eight times their former size, and the testes pour into the circulation a very important secretion. This internal secretion is a substance which nature requires to build up the manhood of the boy. Any act or habit which tends to derange this secretory function will injure a boy's mental and physical powers. Nature does not intend that the procreative function be exercised before full maturity. During these immature years the glandular secretions are intended by nature to be absorbed by the blood and lymph streams and thus converted into vital resources of brain and body.

"*Hygiene of Puberty of Boys.* There is in adolescent boys no such sudden and alarming change as that of the first appearance of menstruation in girls. Nevertheless, there are two normal processes that are likely to be disturbing to many adolescent boys. The existence of these as part of the life of the normal boy of 14 has usually been forgotten by fathers, is unknown to most mothers, and has been deliberately avoided by most writers of books for parents and other general readers.

"The first of these is the frequent and automatic or involuntary change in the blood circulation in the genital organs, especially during sleep, resulting in the phenomenon known to physicians as 'erection.' This may occur in preadolescence, the result of unhygienic conditions or self-stimulation. The testimony of many men is, as far as they can remember, that intensely disturbing desires accompanying the involuntary process make it a serious problem in puberty. No doubt this is the beginning of the young man's great battle for self-control, and this automatic or involuntary process is the physiological basis for the difference in the two sexes in the matter of so-called sexual temptation. The problem is even greater than that caused by the involuntary excitement, for there may be added the influence of memory associations, which may tempt the individual to voluntary repetition of the conditions which without memory would occur only involuntarily, as in all animals.

"Concerning the hygienic management of this great problem, prominent physicians who have given special study to it have advised an abundance of hard work, both physical and mental, plenty of strenuous play, avoidance of stimulating situations, regular sleep in cool bedrooms with light bed covers, sleep on either side, but not on the back, cold bathing, and good hygienic living, such as for human life in general is prescribed in Dr. McLaughlin's 'Personal Hygiene,' in the National Health series.

"The second process that is disturbing and even worries many pubescent boys is that of nocturnal seminal emissions, either during profound sleep or, more often, when the individual is suddenly awakened by great excitement of the automatically congested sexual organs. These experi-

ences are likely to occur occasionally in the first adolescent years of young fellows who never cause relief of the storage reservoirs by masturbation or natural intercourse. Such relief of tension is especially likely to happen in the case of self-controlled young men who are frequently stimulated by the social dances of to-day, or by the ancient game with the modern name 'petting,' or by lascivious literature, stories, pictures, and theatrical shows.

"The general testimony of reliable young men is that a sense of relief and buoyancy follows the day after nocturnal emission. This result might be expected because it is really the concluding stage of an orgasm, such as is the culmination of natural intercourse. There is, then, no reason for supposing that this phenomenon is harmful, and every boy on the verge of puberty should be so informed by his father or by a reliable man teacher. Failure to give such information has turned many a young fellow over to quack doctors who pretend to diagnose dangerous diseases which require very expensive treatment. The wartime publicity on this topic must have reduced the income of the charlatans who prey on young men, but already we have almost forgotten that new groups of boys who are entering puberty need helpful information concerning this problem.

"Statements are often made to the effect that puberty is commonly completed in a few months in girls, but that it is a much longer process in boys. The author knows of no facts on which to base such a comparison. The truth is that we have no way of determining when a boy enters puberty. External signs of local growth and pubescence are only of approximate value in estimating the stage of the boy's development.

"Several authors in a search for moral preachments have tried to show that seminal emission of boys corresponds to the menstrual periodicity of girls. A trained physiologist will surely find difficulty in imagining any sound basis for such a comparison. In the first place, nothing in the male physiology corresponds to menstruation, which is essentially the shedding of a uterine lining that did not receive a fertilized ovum for which it was intended. In the second place, there is no comparison between boys and girls, because there are few cases of periodicity of emissions in boys, and in many of these regularity has been established accidentally in much the same manner in which many people become regular in other functional habits." (Maurice A. Bigelow, Ph. D.)

When the testicular secretions are stored up in excess of what nature can absorb, the superfluous semen will be discharged usually in sleep. This is a perfectly healthy function, providing it be not excessive. By keeping his mind clean; by avoiding immodest acts of all kinds; by being temperate in eating and drinking; and by healthy exercise of body and mind the boy and the young man will eliminate all danger of excessive loss of the aforesaid secretions. And the same may be said of women. An excessive discharge from the Bartholinian glands, or unnatural orgasms from the womb greatly injures the woman. Even excessive excitement in dancing or in close embraces by a lover may produce excessive discharges. It is evident that masturbation in women will result in an unnatural loss of these secretions. "Women experience a discharge from slighter stimuli than do men." Often pressing the breasts by contact in the dance causes a discharge from the Bartholinian glands. These losses cause listlessness,

nervousness, mental and spiritual dullness. Eminent physicians believe that by masturbation women suffer equally with men.

Exceptional cases are found where men never suffer a physiological seminal emission. I believe that such men are rare, but the possibility can not be denied. I have intimate knowledge of a man, who married at about thirty years of age; who is the father of two boys; and who neither before his marriage nor during the periods of conjugal continence has ever experienced a spontaneous seminal emission. He has complete control of his sexual emotions: his love of his wife is mainly psychic.

Sometimes the *glans clitoris* and its *prepuce* adhere, producing what is known as the *hooded clitoris*. In such cases the *sebum* from the follicles of the organ may decompose, thus by irritation of the nerves inciting to masturbation. In such cases the hood of the glans clitoris should be removed by a surgical operation. In fact, any adhering prepuce should always be removed, as it may cause atrophy of the clitoris thereby inducing frigidity.

If we accept the term semen in the sense of a procreative fluid, then it is evident that there can be no seminal discharge in women. But there is in orgasm, the discharge of a vital fluid, and the unnatural discharge of this weakens the woman's mind and body.

This discharge is thus described by Dr. Munde (Amer. Jour. of Obstetrics, vol. XVI. p. 846, quoted by Dr. Malchow):

"We ourselves have seen the gushing, almost in jets, of clear, viscid mucus from the external os, during evident sexual excitement, produced by a rather prolonged digital and specular examination in an erotic woman. The lips of the external os alternately opened and closed, with each gaping emitting clear mucus, until the excitement, which we confess to having intentionally prolonged by gently titillating the cervix with a sound through the Sims' speculum, reached such a height as to cause the woman to sit up on the table and thus end the experiment."

Dr. Upshur (quoted by Malchow) in "Disorders of Menstruation" comments on Dr. Munde's experiment thus:

"I myself have seen the same condition of things occur more than once. The fact is this: Under the stimulus of sexual excitement, the cervix becomes engorged with blood and softer, the os expands, and the canal of the cervix dilates so that a sound, which could not pass through the cavity before, is easily admitted now; at the same time the cervix is thrust forward and there is a gaping, suction action by which the seminal fluid is sucked into the canal of the cervix. So soon as the orgasm ends, it returns to its normal condition."

In dealing with the subject of masturbation in women physicians distinguish between uterine masturbation and *clitoridian* masturbation.

Uterine masturbation is produced by introducing some object through the vagina and titillating the vagina and the cervix of the womb. Dr. Frank P. Davis declares that he has seen feeble-minded girls pick up a rough stick and use it with which to masturbate.

Clitoridian masturbation is effected by manipulating the clitoris. These different modes do not change the species of the sin, but physiologically the uterine abuse produces more evil effects. Surely both modes de-

range the female organs and induce disease.

Uterine masturbation is more liable to cause inflammation, ulcers, cancer of the uterus and sterility.

Women usually feel greater sexual passion during the menses, and occasionally they are tempted to manipulate the clitoris to allay the pain often felt at that time. It is the writer's opinion that this manipulation is unlawful. No physical discomfort resulting from the turgescence of the penis of the male would justify a direct act of masturbation. The case seems to be the same in the woman. The end may be the allaying of the pain but she reaches it by an act that is by nature ordained to excite unnatural sexual feeling. While present relief might result, a habit would be established; abused nature would demand more and more such excitement, and grave disorder would follow. A hot bath, or hot appliances are lawful remedies of equal efficiency.

The sin of masturbation lies not alone in the unlawful effusion of the seed, but in the abuse of nature to procure venereal emotion. Hence a child before puberty, and an old man who no longer seminates may be guilty of the sin.

Owing to its great value we shall quote here in full the classic treatise of Dr. Prince A. Morrow, entitled, "Health and the Hygiene of Sex."

"At the present day, the ideal of health has entered into the social consciousness as never before. The new thought is health, not merely from the sense of well being that it affords, but as the condition of the best and most useful living. Especially does the ideal of health appeal to young men in whom admiration for physical development and vigor controls the intellect. This comes from recognition of the changed attitude of educators to the importance of school hygiene and physical training. The trend of our modern educational system is in the direction of training the body as well as the intellect. This comes from recognition of the fact that the physical underlies the mental, and that mental efficiency is largely conditioned upon bodily soundness and health.

"All educators agree that a knowledge of hygiene is of the greatest importance. But knowledge of the hygiene of the sex function, which, from a biological point of view is the most important function of the human body, is not considered a desideratum. As a result, young people are left to stumble upon the significance of sex, without a word of lucid explanation of the true meaning and proper use of this function, and its relation to the health and well being of the individual. The majority of young men are launched into the world without that enlightenment which might shield them from sexual errors, without even a word of timely warning as to the dangers which beset their sexual life—dangers which may result in their physical and moral wreckage, and which may have upon the future wife and children all the consequences of crime.

"It is believed by those who have made an intelligent study of conditions, that this ignorance and inexperience are largely responsible for a vast mass of disease and suffering. The object of this pamphlet is to safeguard young men from sexual errors and their consequences by overcoming this ignorance.

"The problem of sex has most important ethical aspects, and no less

important social aspects; but it is essentially a hygienic problem, as it concerns a function of the human body governed by the same laws that preside over other functions, and violation of these laws carries with it severe penalties in the shape of disease. Sexual errors are, for the most part, due to abnormally heightened propensities, which having a physiological basis, must be combated by educational and hygienic, as well as by moral, influences.

"The problem of clean living, or physical morality, is primarily a problem of self-control, of the mastery of the will over the passion. This mastery must be founded on perfect intelligence of the laws of life and sex, and the relation of these laws to the bodily conditions of right living. In order that young men should live according to the physiological laws of a healthy nature, it is necessary to know what those laws are; in order that they may avoid the consequences of the violation of these laws they should know what these consequences are.

"It is the purpose of this educational pamphlet to give a scientific explanation of the laws of sex, their practical bearing upon the health of the individual, and to set forth clearly the dangers in the shape of ill health and disease which follow the infraction of those laws.

"We do not underestimate the ethical features of sex hygiene. We do not assume that virtue and intelligence are synonymous. But this ethical and moral education we are not qualified to impart. For this the student must depend upon the precept and example of his parents and preceptors.

"These questions present themselves to many young men: How can I best use my body in the interests of my health, happiness and efficiency in life, and how will abuse of my body impair health, happiness and efficiency?

"The first requisite is to observe the golden maxim handed down to us from antiquity: Know thyself. This injunction, for our present purposes, comprehends simply a knowledge of the two great functions of the body concerned in the preservation and transmission of life, viz.—the bodily or somatic function, and the reproductive or sex function. The former includes those activities which minister to self-preservation; the latter embraces those activities which are concerned in the perpetuation of the species.

"While the sex function has a specialized purpose in economy, it cannot be considered as distinct and independent of the somatic function—the two are closely inter-related, each supplies force and energy to the other, and disorder of the one reacts unfavorably upon the other. Health means wholeness; it is the resultant of the harmonious working of all the functions of the body. Perfect health is not possible when any important function is disordered or deranged in its normal working.

"It is evident that this conception of the sex function, its true meaning and proper use, and the necessity of its control, does not correspond with the sex knowledge which the average young man has picked up from various haphazard sources, and which is for the most part a compound of incomplete knowledge and dangerous error. A celebrated Greek philosopher has long ago said that the most needful piece of learning for the practical uses of life is to unlearn all that is untrue.

"Now, what are some of the untruths that young men should know?

"1st. The idea, almost universally prevalent, that sexual intercourse is a physical necessity for men and essential to their health. This idea is most pernicious in its influence upon the sexual character and conduct, and constitutes one of the most powerful subjective stimulants to sexual debauch, since no man can be convinced that anything which is necessary to health can be morally wrong. It may be positively affirmed that the so-called 'sexual necessity' is a physiological fallacy which has no shadow of support in the teachings of science. The experience of thousands who have led continent but healthy lives shows that the exercise of the reproductive function is not necessary to health.

"2nd. A no less glaring untruth is that sexual intercourse is necessary to the preservation of virility. It is to be regretted that this error rests upon a substratum of so-called medical authority. Some physicians have taught this fallacy on the principle that all structures of the body need to be exercised in order to prevent a loss of function. This opinion was based upon an entire misapprehension of the nature of the reproductive function, and the physiological processes which maintain its health, and is not now held by medical authorities. The testicles, the essential organs of generation, are glands, and like the tear and milk glands, their functional activity is dependent upon the influence of certain special stimuli, usually of an emotional nature. They may remain inactive for an indefinite period without impairment of their function. One might as well say that if the tear glands were not regularly exercised by weeping the fountain of tears would dry up.

"Even when the seminiferous tubes are blocked up by gonorrheal inflammation and the power of procreation is entirely lost, the testicles do not waste away, and virility is unimpaired. The same fact is shown by the results of dividing these tubes in the operation of vasectomy. Experience shows that many men who have lived absolutely chaste lives through youth and manhood, and married in middle life, have found themselves perfectly potent and fit for parentage.

"I have the authority of a priest of high standing in the Catholic Church for stating that it has been observed when a lay-brother, an inmate of the convent and subject to its rules, but who has not taken vows and is at liberty to leave the order at will—when such a lay-brother leaves the convent and marries, such a union is, as a rule, exceptionally prolific.

"The excessive use of the sex function is apt to cause impotence, but not its non-use. Indeed, any medical man will attest that impotence occurs almost exclusively in those who have abused their sexual powers.

"3d. Another untruth to be unlearned is that chastity is not possible under the conditions in which most young men live; and that the general principles of morality do not apply to their sex conduct. In other words, that man is polygamous by nature, and that one cannot go against nature. This is but another outcropping of the many errors which are rooted in the fallacy of the 'sexual necessity.' What is termed nature is simply heredity and training; our ideas, our conventional views of the relations of men and women are what have been trained in us. There is no physiological basis for the conventional view that while chastity is natural and

required in women, it is not to be expected of men, who are differently constituted. The truth is that men are not impelled to sensuality by the force of physiological endowment. From the physiological standpoint there is no more necessity for a young man to 'sow his wild oats' than for his sister to do the same. The relative morality of men and women is due not so much to a difference of physiology as to a difference in education and moral training. While unchastity in women may have more serious social consequences in the shape of illegitimate children, maternity is not possible without masculine agency, and man is usually the aggressor in sexual relations.

"4th. Another outcropping of this fallacy is the notion that the sex instinct in man is imperious and cannot be controlled. The imperiousness of the sex instinct has been much overrated. Most young men are initiated into sexual debauch not so much from the promptings of a strong physiological impulse, as through curiosity, drunkenness, or the mistaken idea that sexual intercourse is the necessary proof of manhood, the brevet of virility, etc., not realizing that it is more manly to resist a wrong impulse than to yield to it. The experience of specialists shows that it is not the strongly sexed and most virile men who are most given to licentiousness, but those whose sexual organs have been rendered weak and irritable by unnatural exercise, in whom the habit of sensual indulgence has been set up, and in whom self-control has not been developed by exercise, or the will power weakened. The sexual weaklings yield to sensual impulses which the normally strong feel, but repress. It is a well-known fact that the insane are given more to masturbation and sexual excesses where opportunity exists than normal persons.

"5th. Another untruth is that a man has a natural unassailable right to indulge his sensual impulse as he pleases. While it may be considered a rude interference with one's personal liberty to dictate what a man shall eat or drink, or how he shall exercise his body, the sex function is differentiated from all other functions of the body by the fact that its exercise involves another person, and that it may have consequences affecting not only one life but a succession of lives. What a man eats and drinks affects only himself; how he uses the sex function affects society and the race.

"Organized society confers certain benefits and protection, and at the same time imposes certain obligations upon the individual. The cardinal obligation is that he shall not injure others; the rights of society are paramount to those of the individual. Our social evolution is the history of the conflict of instinctive impulses against the rights of others, and social progress is measured by the degree in which the selfish impulses of the individual are subordinated to the interests of the collective whole. The experience of human society through the ages has shown that the interests of the social order, both physical and moral, are best subserved by directing the exercise of the sex function into a monogamous channel; experience has shown no less conclusively that the vast mass of disease, misery, and degeneration which constiute the venereal plague, results from irregular sexual relations.

"Marriage was instituted for the purpose of controlling and ethicizing sex relations, and for the procreation, care, and maintenance of children. Within marriage sexual relations are beneficial to society as the necessary means of perpetuating the race; outside of marriage they are harmful to society. Not only the morality, but the productiveness and the physical progress of the race are bound up with the conservation of the monogamous relation.

"Marriage, home, and children enter into the aspirations of every normally constituted man; but many a young man looks forward to settling down into a well-ordered existence of family life only after he has 'had his fling' in the under-world of vice and dissipation. He would, however, not wish to marry a woman who had done likewise. Apart from all higher moral considerations, licentious living has physical consequences, often disastrous consequences, which may impair or ruin his health, vitiate his manhood, and lead to a forfeiture of those hopes and aspirations which are to be fulfilled in a safe, fruitful, and happy marriage. These serious consequences are not only possible, but they are probable. They are the almost invariable concomitants of licentious living.

"These consequences are manifest in a class of diseases comprehended under the general term, venereal. As these diseases are frequently the subject of conversation among young men, almost all of them know of their existence; but few of them have any adequate conception of their real significance and their consequences to themselves and others, or the laws of their contagion.

"Now, it is better to know things right than to know them wrong. It is better to have clear, positive, and scientific knowledge than incomplete knowledge charged with error. Before exposing himself to the contraction of these diseases, every young man should know to what he exposes himself; and in this connection I may say that exposure and contraction of disease are almost inseparable. This is due to the fact that these diseases are highly contagious during a long period, and almost all prostitutes are diseased. A prevalent error is that it requires a long course of licentious living to acquire venereal disease. This fact cannot be too strongly impressed that infection does not come from a series of exposures, but always from a single exposure, and this may be the first.

"Further, safety from infection cannot be compassed by so-called protectives, which most often confer only an illusory security, nor yet by circumspection in the choice of a partner. Experience shows that the younger, fresher, and more attractive looking of the loose women who frequent the theatres, dance halls or other public places, are the most dangerous as sources of contagion. The experience of all specialists concurs upon this point, that the only real safety lies in entire abstention from intercourse with lewd women.

"There are three distinct types of venereal disease known as chancroid, gonorrhea, and syphilis; the order in which they are enumerated representing an ascending scale of gravity.

"Chancroid, the least significant, as it does not affect the general system, is an ulcer usually limited to the place of its origin. Its local effects may be serious, especially when complicated, causing extensive destruction

of the tissues and even mutilation of the genital organs. One of its most common complications is inflammation of the glands in the groin, known as bubo. These inflamed glands usually form abscesses, with more or less destruction of the surrounding tissues, and which may require weeks or even months for healing. They leave unsightly scars which are indelible.

"Gonorrhea is an infection due to a specific germ, the gonococcus, which causes inflammation of the urethral canal, attended with a copious discharge of pus, with more or less painful symptoms, and liable to numerous complications affecting the neighboring structures.

"In the conception of the laity, gonorrhea has always been regarded as a trivial local infection of no more significance than a cold in the head, something to be treated as a joke, easily cured, and without consequences. From the medical point of view, gonorrhea is a very serious infection, which, in respect to the character and sum total of its dangers, is scarcely inferior in significance to syphilis.

"Among its local complications may be mentioned painful inflammation of the prostate gland and bladder, sometimes ascending to the kidneys. A common complication is inflammation of the epididymis, the annex organ of the testicle, of an exceedingly painful character, necessitating rest in bed and active treatment for some time. The inflammation not infrequently causes a complete occlusion or blocking up of the tubes which convey the semen, resulting in sterility or inability to procreate. Sterility in men from this cause is much more common than was formerly supposed. Certainly no greater misfortune could befall a young man than to realize that even if he marries, his must be a home without prospect of children. Sterility defeats the supreme purpose of marriage, the procreation of children.

"Stricture of the urethra is another complication or sequence of gonococcus infection. The narrowing of the canal may impede or entirely prevent the passage of urine, necessitating a surgical operation; or it may kill by inflaming the kidneys.

"Another complication of this infection is inflammation of the joints, constituting gonorrheal rheumatism. One or several joints may be affected at the same time or successively. These joint infections are always serious, accompanied with intense pain and stiffness, and not infrequently resulting in permanent stiffness, often deformity, which cripples and disables the patient.

"An added and altogether grave significance has been given to gonococcus infection by recent advances in medical science which show that the gonococci, or germs of this disease, are susceptible of being taken up by the blood vessels and lymphatics, and may affect almost every organ of the body with results dangerous, and even fatal to life. The gonococci have been identified in the membranes of the brain, the spinal cord, the heart, and other internal organs, as well as in the joints, tendons, muscles, etc. Such internal complications of gonorrhea often terminate in death.

"Another error common in the laity is that gonorrhea is easily and promptly cured. While this infection may be cured in a few weeks at the beginning by proper treatment, in the majority of cases it is not properly treated. Many patients look upon it with contempt, or resort to the ad-

vertising quack, the druggist, or the prescription of some obliging friend. Most often the inflammation lapses into a chronic condition, termed gleet, which may reveal itself only by a slight mucoid discharge or the presence of an occasional discharge of pus in the morning, or shreds in the urine. In this condition it may persist for months and years, with only occasional symptoms, but nevertheless susceptible of being excited into virulence by any cause of irritation—violent exercise, alcohol, or sexual intercourse. Gleet is exceedingly obstinate to treatment, and it may require many months or years to effect a cure. It is one of the most common causes of neurasthenia, or 'nervous prostration,' in young men.

"Apart from its significance to the individual, gleet is the almost exclusive source of infection in women. This fact has an important relation to infections in marriage. Many men, believing that the cessation of the acute discharge is an evidence of cure, marry, not dreaming that the little filaments coming up from the depths of the urethra are laden with infection. One of the most difficult problems of the genito-urinary surgeon is to determine definitely the presence or absence of these contagious elements.

"Syphilis, the most formidable of this triad of venereal infections, is caused by a specific germ which may invade every constituent element of the body. The attitude of the laity is thus expressed: 'One laughs at gonorrhea, but one fears syphilis.'

"Syphilis is a constitutional disease, an infection of the entire system. It is also an essentially chronic disease, persisting for years, it may be during the entire lifetime. After months or years of quiescence and apparent cure, it may suddenly reveal itself, five, ten, twenty, or thirty years later, by manifestations of the most serious character. The late or dreaded manifestations of the disease are most liable to attack the internal organs essential to life.

"For purposes of description, the course of syphilis is divided into three stages, the primary, secondary, and tertiary. When an individual is inoculated with the syphilitic virus, there is no appreciable evidence of its action for a period of three to five weeks, about twenty-six days on an average. The first appearance is in the form of a chancre or initial lesion at the point of inoculation. From six to eight weeks later, the secondary stage is ushered in by the appearance of an eruption on the surface of the body, and mucous membranes of the mouth and throat. The secondary eruptions are not as a rule continuously present, but they come out in successive crops during the entire stage, which comprises a period of from two to two and a half years.

"The tertiary stage is characterized by lesions which affect the deeper structures of the skin, the bones, the internal organs, and the brain. The duration of the tertiary stage is practically indefinite.

"During the secondary stage the blood, as well as the lesions on the body, contains the poison of the syphilis. For a period of three or four years, sometimes longer, the disease is transmissible both by contagion and inheritance.

"The above is merely an outline of the ordinary course of syphilis which varies in type and severity in different individuals. In general, it

may be said that the secondary manifestations have a tendency to disappear without leaving any trace. The tertiary lesions are always more serious; they are ulcerative and destructive; often damaging the structure as well as the functions of the organs in which they develop.

"While tertiary syphilis may affect every organ of the body, the cutaneous system, the bony system, the circulatory system, the nervous system, as well as the eye, ear, larynx, lungs, liver, kidneys, and testicles, its most serious effects are manifest in the sphere of the nervous system, which co-ordinates and controls all the functions of the body. Syphilis is today recognized as the chief factor in organic diseases of the nervous system, and the chief, if not the sole, cause of paresis or general paralysis of the insane, as well as locomotor ataxia. It is estimated that seventy-five per cent. of ocular paralysis, and a large proportion of the apoplexies are caused by syphilis. The most sombre feature of this picture is the exceeding gravity of syphilitic affections of the brain and cord. Few of these cases are cured; about twenty per cent. are infirmities physical and mental of a disabling character, which may render them a charge upon their friends or an object of public charity.

"It will be seen then that the danger of syphilis to the health and life of the individual is measured by its remote rather than by its immediate effects. The danger of syphilis from contagion or transmission to others is confined to the earlier years of the disease. The social significance of syphilis is due to the multitudinous modes of contagion, and the consequent infection of the innocent. It is not only cantagious through sexual intercourse, but may be spread in the ordinary relations of family and social life. The secretions of mucous patches in the mouth, or of any lesion on the body are charged with the virus. Any object on which this virus is deposited may serve as a vehicle for contagion, such as eating and drinking utensils, pipes, cigar holders, etc. Kissing is one of the most common means of contamination. Numerous cases might be cited, such as that of a member of a graduating class of a neighboring university who, by kisisng, infected his mother and his nineteen-year-old sister who was engaged to be married. A leper is infinitely less dangerous to others as a source of contagion than a syphilitic.

"Such are some of the undeniable and scientifically demonstrated dangers of a class of diseases which constitute a veritable peril to the individual, and a still greater peril to society and the race. Apart from their menace to the public health, the special significance of these diseases as a social danger is due to the fact that they specifically affect the system of generation—gonorrhea, by its sterilizing influence upon the procreative capacity of husband and wife; syphilis, by its blighting, destructive effect upon the children.

"A large proportion of men contract these diseases, and many, believing themselves cured, it may be, introduce the infection into the family. This infection of the innocent in his own home, whom a man is under the most sacred obligation to protect, is the saddest of all the consequences of a licentious life.

"It now remains to consider some of the effects of gonorrhea and syphilis upon the innocent wife, and upon the innocent children.

"Effects Upon the Wife. The consequence of gonococcus infection are always more serious to the wife and mother in fulfilling the functions for which marriage was instituted. The infection may extend to the womb, tubes and ovaries, and to a more vital organ, the peritoneum, rendering her a permanent invalid, and in many cases necessitating the removal of the maternal organs to save her life. A large proportion of all special surgical operations performed on the maternal organs are the result of gonococcus infection. In addition a large proportion (probably one in three) of gonorrheally infected women are rendered sterile. It is estimated that 72.1 per cent. of sterility in married life from incapacity, and not from choice, is due to sterility of the husband and infection of the wife by the husband.

"In addition to the dangers of syphilis to the health and life of the mother, her strength and resisting capacity against the disease are weakened by the bearing of diseased or dead children.

"Effects Upon the Offspring. While gonorrhea is not transmissible by heredity, it carries with it certain infective risks to the offspring. The most common and serious risk is infection of the eyes of the child during the process of birth or shortly after. Fully eighty per cent. of the blindness in the newborn is caused by gonococcus infection which the husband has communicated to the wife, and by her unconsciously transferred to the eyes of the child. The question asked of old, 'Who did sin, this man, or his parents, that he was born blind?' has been definitely answered by modern medical science.

"There are other dangers of a serious character to the offspring caused by the introduction of gonococcus infection into the family, which may not be here enumerated.

"Syphilis is the only disease which is transmitted to the offspring in full virulence, and its hereditary effects are appalling. From sixty to eighty per cent. of children who inherit syphilis are born dead or die shortly after birth. Those who survive are subject to various organic defects and arrests of development which make of them physical and mental weaklings.

"It will be seen that these diseases have consequences which are not limited to the individual, nor yet to the future wife and mother, but extend to the children, and through them to society at large. Gonorrhea and syphilis are most potent factors in the depopulation and degeneration of the race.

"It is especially in relation to posterity that the creative or racial function assumes a supreme importance. The desire for children is natural and instinctive—not offspring merely, but healthy well-formed, strong children. Every child has a right to be born in conditions of vitality, health, and physical vigor. No man has a right, through the effects of his sensual indulgence, to lay upon his innocent offspring a burden of weakness, disease, and suffering, which may affect not only one life, but a succession of lives.

"Viewing the body as a physical mechanism, made up of material furnished by the progenitors, it is evident that unless this material be sound

and healthy it must produce a defective organization. A man can transmit only that which he is. If his system is weakened by excess or tainted with disease, he can transmit only physical weaklings or beings tainted with the parental disease. Syphilis is a racial poison through its vitiating effects upon the primordial elements of life—the germ cells. It has been well said that 'the greatest criminal is he who poisons the germ cells.' He poisons life at the fountain head.

"The perpetuation of life, the procreation of a new being is the most responsible act of a man's existence. It is his most sacred duty to transmit unimpaired his organic vigor to the children in whom he perpetuates himself.

"Some of the facts most essential for young men to know who aspire to health and strength of mind and body, may be summarized as follows:

"(1) The specific and supreme purpose of the sex function is reproduction, and not sensual pleasure. From the biological standpoint the chief end of man and woman is not merely to live, but to transmit life, and from this point of view all other functions of the body exist and need to be conserved in order to permit of the accomplishment of this function.

"Nature has implanted in all animals the sexual instinct, which incites to a relation between the sexes involving reproduction. While in animals the sex instinct is aroused only at certain periods for purposes of reproduction, in man it may be excited at any time and indulged merely for sensual gratification. It is this human peculiarity of using the sex function solely as a means of sensual pleasure that leads to the vicious aspect of sex relations. Man, therefore, is the only animal endowed with reason for the guidance and will for the control of the sex impulse.

"(2) The sex, or creative function, has an important relation to the physical, mental and moral development of the individual. The first function of the testicles, the essential organs of generation, is to build the boy into the man; in other words, the boy is the father of the man in a strictly physical sense. This is effected through the agency of the internal secretions of the testicles, which, it is to be observed, are distinct from the external secretions, which contain the spermatozoa or seed. If the individual be deprived of his testicular organs in early life, by accidental injury, or by castration, as in the case of eunuchs, he does not develop into a normal man. Not only is there an alteration in the physical conformation of the individual, but an arrest of development of the secondary sexual characters which distinguish the male. In his voice, lack of beard, development of the mammae, etc., he approaches the feminine type.

"The influence of sex is no less marked within the sphere of the nervous system, especially upon the mentality of the individual. It has a marked stimulating influence upon the imagination, the romantic sentiment, the esthetic sense, and the higher creative faculties.

"The influence of sex can be traced in the development of the emotional, moral, and social qualities. Sex is the physical basis of love, as well as of family sentiment, the motive for the establishment of the home, etc.; it profoundly modifies the thoughts, character, and habits of the individual, the qualities of courage, manliness, and self-control. When the sexual

system is weakened or rendered impotent by the habit of masturbation or sexual excess, the individual loses his self-respect, his will power, his mental force. He is solitary rather than social in his habits, he loses his freshness, vigor, buoyancy of spirit, and joy of life; his mental powers are dulled, his memory impaired, his power of concentration lost—with a long train of physical symptoms which cannot be enumerated.

"(3) Nature makes no provision for reproduction until after puberty. In the early formative period of life the reproductive organs are rudimentary and undeveloped, and their normal condition is one of quiescence. With the advent of puberty, the sexual organs begin to acquire their growth, with the development of what are termed the secondary sexual characters, and a new function, endowed with the wonderful power of transmitting life, is constituted.

"In the normal growth of the body all its nutritive energies are at first directed to the upbuilding of those organs which are concerned in the conservation of the race. Experience shows that before the growth of the body is completed either masturbation or premature sexual relations may impair the general nutrition of the body as a whole, and if this drain upon the vital powers be long continued or excessive there is an arrest of both the bodily and genital development.

"The evil effects of the premature exercise of the sex organs is no less manifest within the sphere of the nervous system—the mental, as well as the physical health suffers. The most damaging results are seen in those who begin this practice in early life, when the sex organs are entirely unfitted to respond to this precocious demand upon their functional activities. Boys who suffer from sexual disorders thus induced, are apt to be restless, dull, or listless, with an inability to concentrate their minds upon their studies. Memory is impaired, and their capacity for mental work is diminished. The brightest and most capable students are rarely afflicted by this seminal drain. Continence in young men is the normal condition, and any demand upon the functional activity of the reproductive organs before physical maturity is attained is contrary to nature and distinctly harmful.

"(4) The sex organs have a two-fold function; the chief function is reproduction, the other is to supply force and energy to the organs of the body, notably the nervous and muscular systems, through their internal secretions. On the other hand, bodily conditions influence the functional activity and vigor of the reproductive glands. There would thus appear to be a system of redemption and exchange by virtue of which there is an interchange of energy between the sex and somatic functions, through which the equilibrium of health is maintained. Experience shows that arduous physical and mental labor, even after maturity is attained, is best performed when the sex organs are not exercised, while sexual excess distinctly impairs muscular strength and mental efficiency. This correlation between the sex and somatic functions has been long recognized. In the gladiatorial contests of ancient Rome the actors were not permitted to have sexual intercourse. Many a modern Samson has been shorn of his strength by reposing in the lap of the modern Delilah. The physical

downfall of many knights of the ring has been traced to sexual excesses. It is well known that in training for pugilistic or athletic contests requiring the maximum efficiency of nerve and strength, one essential condition is that the sex organs should not be exercised.

"(5) When the functional activity of the sex organs is established, it is liable to be manifest in the form of emissions. Occurring within certain limits of frequency, say once in a fortnight, emissions are not abnormal and are not to be considered as either the cause or consequence of ill health, but rather an evidence of functional vigor. This fact is alluded to, as many young men attach an exaggerated significance to this purely physiological phenomenon, especially after reading the lurid descriptions of quacks, who interpret it as an evidence of loss of manhood, impotence, etc.

"Emissions occurring frequently, as a result of irritation of the sexual system from masturbation, from gonorrheal inflammation, or sexual excess, have a much graver significance, and may seriously compromise the health. The frequently repeated shocks to the nervous system and loss of the seminal fluid, result in a long train of local and constitutional disorders. Pathological emissions are most commonly the result of masturbation. The pernicious effects of this habit, expressed in various physical and nervous disorders, such as neurasthenia, hysteria, melancholy, etc., cannot be here considered.

"(6) Up to the period of puberty the sex instinct is dormant, unless it has been precociously excited or abnormally developed. The awakening of this instinct is first manifest in the organic sensations which attend the maturing of the reproductive glands. As a result of those physiological processes which affect the transformation of the boy into the man, the youth becomes conscious of the stirrings of new sensations and impulses which centre in the sex organs. It is a great law of nature that the new function which ushers him into manhood should be attended with a special appetite and desires before unknown. Sex desire when true virility is attained is therefore normal; it exists as a part of one's physical constitution; it is bound to be a factor, and a most important factor, in the future life of the individual. While the sex appetite cannot be altered or done away with, it is of the highest importance that it be regulated and controlled. Nature in conferring upon the young man this new creative function and the instinct which incites to its exercise, has also endowed him with the power of effective control which reason and conscience impose upon instinct.

"From this presentation of the teachings of science and the facts of experience in regard to the laws and hygiene of sex, it is evident that clean living is the surest foundation of health, character, and usefulness in life, and is without question the highest moral obligation of man and woman.

"The question may be asked: How can I control sex desires and resist sex temptations? As these desires emanate from the mind, as well as proceed from bodily conditions, both mental and physical measures should be employed.

"The first and most essential condition is to create a right mental attitude toward the appetites and passions, to have a right conception of the high purpose of the reproductive function, as one of the most important functions of the body, endowed with the wonderful power of transmitting life, and which should be regulated by reason, controlled by will and conscience, and exercised only in the legitimate way imposed by marriage. Every young man should build up high ideals of sex relations, based upon respect for his own body, respect for woman in general, and especially respect for his duty to the pure young woman who will one day be his wife, and to the children in whom he will perpetuate himself.

"That chastity conduces to health and strength of mind and body, is a physiological law, and every young man should set before him the ideal of a pure and vigorous manhood.

"In the prevention of disease, the first condition is to correct the cause. To control sensual propensities one must avoid the causes which incite them.

"The thought, emotion, feeling, always precedes and tends to pass into the act. There is no fact better established than that impurity of mind leads to impurity of conduct; it is the imagination that does the mischief. In many young men the imagination is constantly fed and stimulated by sexual impressions, thoughts and images from demoralizing plays, erotic literature, and vulgar conversations, which engender a low tone of thought and feeling toward the personality and virtue of women. It is of the utmost importance to cleanse the mind of that 'foul, perilous stuff' from which sensuality arises. Clean thinking is an absolutely necessary condition of clean living.

"The emancipation of the mind from the obsession of sensual thoughts cannot be effected by merely negative resistance. One must resolutely turn the attention to something else. The sensual appeal must be replaced by some form of physical or intellectual activity, by the determinate exercise of the mind in another direction. One cardinal advantage of athletic sports is that they are exercises of the mind as well as of the body.

"But the irritation may proceed from the sexual organs themselves without conscious influence. There are certain bodily conditions and external agencies which provoke sex desires from irritability and congestion of the organs. The most important local cause of irritation is retention of secretions under the foreskin. If this cannot be readily controlled, circumcision is required. Among the excitants of sex desire may be mentioned stimulating food, and excess of meat, alcohol, cigarette smoking, certain drugs, etc.

"The use of alcohol is perhaps the most powerful incitation to sexual debauch. It stimulates desire, while by its benumbing effect upon self-control it dulls the moral sense, weakens the will, and thus diminishes the capacity of resistance to sex temptations. A large proportion of young men owe their initial debauch to alcohol. Forel's statistics show that 76.4 per cent. of venereal contaminations were effected under the influence of alcohol, and that the greatest number of such contaminations occurred in persons below twenty-five years of age.

"A lazy, luxurious life, with no occupation or serious aim in life, sedentary habits, etc., predispose to sensuality.

"Physical and mental labor pushed to the point of fatigue serves to divert energy from the sex organs. Physical exercises, sports, athletics, have a positive preventive value against the indulgence of sexual propensities. Such exercises serve as an outlet to the superabundant energy, which characterizes the adolescent period of life. There can be no more effective deterrent from sensual desires than athletic sports, as both the mind and body are engaged and participate in the benefit.

"A valuable inhibitory influence against the indulgence of sensual propensities should be a wholesome fear of infection. The term 'fear' is regarded by many as a challenge to a young man rather than a curb against prohibited acts, but no intelligent human being disregards the consequences of his acts. Not even the most reckless individual would drink from a polluted water source if he knew that it contained germs of typhoid. The lowest form of prudence—an intelligent selfishness—should prevent a man from exposing himself to a real danger if he knows its consequences.

"In counselling chastity to young men and setting forth its possibility and advantages, the ideal in view is not a race of sexual ascetics, but of strong, manly men. The ideal of manhood we would inculcate is that the young man should be so trained that his body shall be the ready servant of his will; in the words of Huxley: 'No stunted ascetic, but one full of life and fire, whose passions are trained to come to heel by a vigorous will.' Perfect inhibition is the sign of perfect health.

"Finally, and above all, as the sex function has a moral as well as a physical aspect, the conscience and moral sense are most important factors in its control. While prominence has been given to the purely hygienic aspects of the problem of sex, we by no means ignore or underrate the value of that ethical teaching which comes more properly within the province of the religious teacher. It is the physician's province to teach the morality that grows out of the scientific—physical morality, and in this connection it may be said that in everything relating to the health and well-being of the individual the teachings of science are in perfect accord with the principles of morality. Every question of hygiene is a question of morals, when it relates to the voluntary act of an individual which involves others in its consequences.

"Statistics have shown that by far the greatest temptations of young men during their student days relate to the sex impulse; it may be said, therefore, that their greatest moral obligation at this period is to control this impulse and to lead a clean life. No one can undergo the physical degradation resulting from unclean living without at the same time undergoing corresponding moral degradation. On these points medical science and ethics are absolutely at one.

"The young man who stands at the parting of the ways—on the one hand the tempting road of sensual pleasure, on the other the more manly path of duty, should ponder well these words of Lowell: 'If one follows the path of duty he shall find her finally more beautiful than pleasure, and with infinitely more to give.'

"While these suggestions may be helpful in enabling young men to control sex desires and resist sex temptations, the problem of clean living is, as before stated, a problem of self-control, the power which lies at the foundation of all character, the power to resist the immediate gratification of instinctive impulses for the sake of the future good."

In this splendid treatise it is evident that Huxley did not understand the asceticism of the Catholic Church. Her ascetics are not stunted, but strong, healthy normal men, who for the highest motive practice perpetual chastity; such men as St. Paul, St. John, St. Thomas, Vincent of Paul, St. Francis of Assisi.

In 1831 Mozart, then twenty-five years old, wrote to a friend: "Nature clamors loud in me, and perhaps stronger than in a coarse and ignorant villain; still, I may not pattern my life on that of many youths around me. To do so, on the one hand, I have too religious a mind; I am too honest and I love my neighbor too much to purpose deceiving some poor girl. On the other hand, I prize my health too much to jeopardize it by common commerce. So I can swear before God that up to this day I have not a single fall to reproach myself with."

Syphilis is far more common in our Country than we realize. The official Reports of the Surgeon-General of the United States declare that the prevalence of venereal disease "has come to outweigh in importance any other sanitary question which now confronts the army, and neither our National optimism nor the Anglo-Saxon disposition to ignore a subject which is offensive to public prudery can longer excuse a frank and honest confrontation of the subject."

The official Records of some of the belligerant nations in the World War evince our national infamy:

In the Bavarian army 15 per 1,000 men were treated for venereal diseases.

In the Prussian army 18 per 1,000 were treated.

In the Japanese army 37 per 1,000 were treated.

In the British army 75 per 1,000 were treated.

In the American army 200 per 1,000 men were treated.

If syphilis be properly treated at an early stage, and if the cure be long continued, the prognosis is good.

Dr. C. M. Whitney believes that, of those who take a long efficient treatment, 95 per cent. may be healed; but he adds that those opiniated patients who rashly shorten their cure, and judge their own symptoms, in equal percentage show later symptoms, and their children may inherit the malady.

What a sorrow for a father to behold this fearful inheritance which he has transmitted to his children!

"Gonorrhea is a very different disease from syphilis in almost every way, but the micro-organism which causes it—the gonococcus—does have the same ability as the spirochæta to keep alive somewhere in the tissues of the body for several years after its first attack and await its chance to become active again at intervals. Gonorrhea after its first development in the body is a more difficult disease to control than syphilis, and is more

dangerous in many ways to women and children. This is so because of the ability of the gonococcus to lie dormant in the genital organs of the male long after the disease has apparently been cured, and to escape into the genital tissues of the wife, resulting in acute infection. Such an infection may cause death, or sterility, or a local inflammation may occur and subside only to recur in the mother when a child is born. This frequently occurs and causes subsequent sterility in the woman, incidentally infecting the child's eyes during birth and often causing blindness. It is for such tragic reasons that all the forces of society must be brought to bear upon the treatment and prevention of this disease.

"Gonorrhea usually begins in from nine to fourteen days after infection as a local inflammation which develops rapidly into an acute condition with pain, discharge of pus, and involvement of increasing areas of the membranes lining the external genito-urinary organs. If the body successfully resists or is promptly aided by treatment to resist, the extent of the inflammatory process may be limited and there is some chance of killing the invading organisms and restoring the tissues to normal. If attempts to combat the disease are not markedly successful or the body's resistance is generally weak, the disease extends with serious consequences to the deeper genito-urinary structures including the prostate, bladder, and sometimes kidneys, and the testes in the male and particularly through the uterus to the Fallopian tubes in the female. From the latter the disease may extend like wild-fire to the ovaries and prepare the way for acute inflammation of the lining of the abdominal cavity, which accounts for many deaths in gonorrhea cases among women as contrasted with lack of such a termination in the male. In both men and women sterilization may result, which causes a considerable proportion of the childless marriages. The disease may also extend to other parts of the body, especially to the joints where it produces a most painful form of the disease, frequently described as a 'rheumatism.'

"Early diagnosis, immediate and persistent treatment are the great measures in dealing with this malady, both for the sake of the individual and the protection of the public." (Dr. William Freeman Snow)

The physical and moral perfection of the state of celibacy rests on a sure scientific and religious basis. Dr. Max Hühner (Disorders of the Sexual Function, pp. 261-266) gives us his own excellent judgment, and supports it by the most convincing data.

"In the following pages I shall endeavor to prove that continence is not detrimental to health, considered either from a physiological or psychological standpoint.

"First, considered from the point of view of physiology. It is indeed remarkable that several years ago, when I consulted almost every work on physiology published in the English language during the preceding ten years, not one had anything to say on the question.

"But we have other authorities (outside of physiology) who have expressed opinions on this question. No less an authority than Prof. Bryant, the great English surgeon, says: 'The student should remember that the functions of the testicle, like those of the mammary gland and uterus, may

be suspended for a long period, possibly for life, and yet its structure may be sound and capable of being roused into activity on any healthy stimulation. Unlike other glands, it does not waste or atrophy for want of use.'

"This opinion from the great English surgeon answers a very important objection to continence which I have seen urged by many physicians. I have heard physicians argue as follows: 'Every organ of the body, if not in use for a long time, atrophies; muscles lose their power, joints become stiff, the stomach and intestines refuse to secrete the proper digestive ferments, if these are artificially supplied for a long time; even the higher functions of the brain become "rusty" if not made use of, therefore the genital apparatus ought to be kept active or else it will atrophy and become useless.'

"It is, however, a fact that the sexual organs are constructed upon entirely different principles than most of the other organs of the body. They are constructed for intermittent action and their functions may be suspended indefinitely without harm to either their anatomy or physiology. Witness the mammary gland. A woman becomes pregnant and gives birth to a child, and immediately the gland, which had remained dormant for years, swells up and secretes milk. After lactation is finished the gland becomes smaller and inactive. She may not become pregnant again for ten or more years, and during all this while the gland is not in use, but even after this long period, should she again become pregnant, it will again swell up and be absolutely useful in spite of the long period of disuse. The same is true of the uterus. I have gone somewhat in detail into this question, because it is very important, and is constantly being brought up by the opponents of the continence theory and is very apt to impress the laity.

"James Foster Scott, the great authority on sexual instinct, says: 'If the penalties meted out to the impure are so many, there is yet comfort for the unmarried man in those pages which show that perfect continence is quite compatible with perfect health, and thus a great load is at once lifted from the mind of him who wishes to be conscientious as well as virile and in health with all the organs of the body performing their proper functions.' And again on page 95: 'There is an erroneous and widely spread belief that exercise of the sexual functions is necessary in order to maintain health. . . . The reproductive glands have been so constructed that their specific activities can be suspended for long periods of time without their atrophy or the slightest impairment of function. In this particular they resemble the inherent capabilities of a woman's breasts, which can remain quiescent for years and when called into demand physiologically respond with perfect function.' And again, on page 99: 'It is a pernicious pseudo-physiology which teaches that the exercise of the generative functions is necessary in order to maintain one's physical and mental vigor of manhood.'

"Acton says: 'One argument in favor of incontinence deserves special notice, as it purports to be founded on physiology. I have been consulted by persons who feared, or professed to fear, that if the organs were not regularly exercised they would become atrophied, or that in some way im-

potence might be the result of chastity. This is the assigned reason for committing fornication. There exists no greater error than this or one more opposed to physiological truth. In the first place, I may state that I have, after many years' experience, never seen a single instance of atrophy of the generative organs from this cause.

" 'No continent man need be deterred by this apocryphal fear of atrophy of the testes from living a chaste life.'

"Beale, professor at King's College, London, says: 'And I would remark here that, notwithstanding very strong assertions to the contrary, and by authorities who profess to have thoroughly studied the question, no sufficiently valid objections have been established upon reasonable grounds, or upon facts of physiology and health, to living, nay, to passing life in a state of celibacy.' And again on page 64, in the chapter called 'Question of Physiological Necessity,' he says: 'The argument that if marriage cannot for various reasons be carried out, it is nevertheless necessary, upon physiological grounds, that a substitute of some kind should be found, is altogether erroneous and without foundation. It cannot be too distinctly stated that the strictest temperance and purity is as much in accordance with physiological as moral law, and that the yielding to desire, appetite and passion is no more to be justified upon physiological or physical than upon moral or religious grounds.'

"Sir James Paget, the eminent English surgeon, says: 'Many of your patients will ask you about sexual intercourse, and some will expect you to prescribe fornication. . . . Chastity does no harm to mind or body; its discipline is excellent; marriage can be safely waited for.'

"It must, however, in all fairness be mentioned that there are some who hold directly opposite views on this question, and in order to be candid I shall cite some of these views and attempt to point out their fallacies.

"Lydston says: 'No man or woman at adult age is in perfect physiological condition unless the sexual function is naturally and regularly performed.'

"This would, indeed, be a remarkable statement, but it loses its remarkability as we turn to another chapter in the same work,—that on masturbation. Herein we see, as I shall presently quote, that even this author, who holds such extreme views, cannot deny that continence is perfectly in accord with physiological well being. He says: 'There is one point in sexual physiology that should be impressed upon our patients. The impression prevails among young men that exercise of the sexual function is an absolute physical necessity, irrespective of the method of its accomplishment.' Indeed, it is probable that some physicians who certainly ought to know better foster this idea by ill-weighed and injudicious counsel. This idea is most pernicious in its effects, and it becomes our duty to correct it. Although no adult man or woman under existing conditions is physiologically well balanced in a state of celibacy, one may be perfectly healthy and physically vigorous while living a life of absolute continence, if the mind is properly disciplined and the body made completely subservient to the will. The excuse of physical necessity is too often a subterfuge to justify fornication and even masturbation. That

such an excuse should ever be offered is striking testimony regarding the prevalent ignorance of sexual physiology. A better education in the ethics and physiological aspect of the sexual function is a crying necessity. The patient should be impressed with the idea that its (the sexual apparatus) function may be held in abeyance for very long periods, even for life, without necessarily producing physical injury. When thus held in abeyance the generative function may be called into action at any time and present no evidences of deterioration from the compulsory rest.'

"The writer evidently means that sexual intercourse in adult life is desirable for the maintenance of the physiological balance, but is not a necessity under ideal conditions of sexual education; but he would lead us to infer that under the artificial conditions that constitute society today it may, and often does, become a necessity.

"It is, of course, obvious that the purer one is brought up and the purer his associates are, the purer his thoughts will be, and the easier it will be for him to remain continent. And, on the other hand, if the mind is constantly kept excited by the reading of immoral literature, or the presence of lewd associates, it becomes extremely difficult to refrain from sexual intercourse. This difficulty is enormously increased if sexual intercourse has already been indulged in, so that what was at first a novelty finally becomes a habit. At this stage fornication may become a necessity in the same sense as alcohol to the habitual drunkard or morphine to the morphine fiend." (Max Hühner: op. cit.)

The authorities cited by Hühner are: Bryant, Thomas: Surgery; Scott, James Foster: Sexual Instinct; Acton, William: The Functions and Disorders of the Reproductive Organs; Beale, Lionel: Our Morality and the Moral Question; Paget, Sir James: Sexual Hypochondriasis.

"As far as comparisons between married women and women vowed to celibacy (nuns and members of other celibate religious orders) justify any conclusion, sexual activity and inactivity appear to have little influence on the duration of life. Comparisons between married and single women show, indeed, that the gratification of the sexual impulse and the processes of reproduction are distinctly injurious when experienced before the attainment of sexual maturity. In married women up to the age of thirty, in some countries even up to the age of forty, the mortality is greater than in unmarried women. The notably smaller mortality of married women, as compared with unmarried, after the age of forty, is usually explained as the result of the complete fulfillment of the genital functions. It may, however, find a truer explanation in the selection effected by marriage, especially when we take into consideration that from the women thus selected the weaker individuals have been previously weeded out by the processes of reproduction.

"The lesser mortality of married men from the age of twenty upward is to be explained by the selection of the fit which occurs in marriage, by the smaller proportion of marriages among men engaged in hazardous occupations, and by the deterioration in the quality of the unmarried which results from emigration. Still the directly favorable influence of marriage is undeniable, and, no doubt, the ethical factors of this institution have a

beneficial effect, whereas the gratification of the sexual impulse hardly enters into the account.

"Suicide is certainly very little dependent upon repression of the sexual impulse, since all the motives arising out of the affairs of love play together but a small part among the causes of suicide.

"The beneficial influence of marriage in the prevention of insanity is in part apparent merely, since, in the selection exercised by marriage, those predisposed to mental disorder, and those in whom such disorder has already manifested itself, are, for the most part, already excluded. Still, as regards the male sex at any rate, the beneficial influence of marriage is undeniable, and consists principally in the favorable ethical factors of this state. In women, on the other hand, the advantage of marriage is doubtful, since the nerve centres and the nervous system as a whole are strongly affected by the processes of reproduction.

"Criminality in the married is comparatively less common than in the unmarried. In criminal assaults on young persons, repressed sexual impulse plays a part.

"Chlorosis is not in any way dependent on repression of the sexual impulse. A disease apparently analogous to chlorosis, occurring in unmarried women from twenty to thirty years of age, is dependent rather on mental causes, and is relieved by other means than marriage, especially by suitable occupation. Marriage and gestation are distinctly injurious in cases of true chlorosis.

"The satisfaction of the sexual impulse, and still more gestation, favor in women the origin and growth of tumors, give rise often to mechanical disturbances, and open the way for the invasion of toxic pathogenic germs." (Hegar (Alfred Hegar, gynecologist of Freiburg, 1830-1914): The Sexual Impulse, 1894.)

The author does not endorse Dr. Morrow's view that normal sexual feeling be quiescent until puberty. At a very early age vague sexual feelings are felt. They are not specifically differentiated. The undeveloped child is homosexual, heterosexual, and autoerotic. Unless vice enters to lead the potential sexuality into a false course, the development and education of reason builds up a moral sense, and represses the unethical deviation.

Moreover, we must carefully distinguish between normal seminal emissions and pathological seminal emissions.

At puberty the sex glands begin to functionate. The tubules of the testicles secrete the semen which through the vasa deferentia is passed into the seminal vesicles at the base of the bladder. These vesicles mix with the semen their own secretion, the nature of which is not known, but which seems necessary for nature's purpose. The secretion of Cowper's glands (the analogues of the glands of Bartholin) and of the prostate gland are also mixed with the semen.

The secretion of the semen in the tubules is usually a very slow process, but under sexual excitement the secretion is greatly accelerated. Sexual excitement, therefore, save as a normal prelude to lawful coitus, is always prejudicial to the well-being of the man. Hence all impure

thoughts and desires, impure observations, and immodesty in act of any kind unduly excite nature: the excessive emissions which may follow are pathological. The first remedy is to remove the cause. Touching the evil of masturbation many exaggerations and false statements have been made. And on the other hand some excessively minimize the physical and psychic evils resulting from masturbation.

In strict sense the term masturbation means the employment of the hand to effect orgasm, but use has extended the term to embrace every means of producing orgasm outside of sexual intercourse.

Malchow (Sexual Life) quotes from Sturgis, who considers:

"Those who perform the act either while they are married or not, as not infrequently happens, as bachelors or as widowers, being restrained from seeking relief by illicit connection from a moral sense of wrong-doing or from fear of contracting a venereal disease. In these instances the bad results of the habit are much less noteworthy than they are where masturbation is indulged in during youth or early adult life; first, because the physical and mental conditions of the patient are much better calculated to withstand the effects of the habit, and secondly, because the subjects do not perform the habit so intemperately nor so frequently, indulging only so far as is necessary to relieve the urgent needs of their sexual organs. Such men usually masturbate no more frequently than they would practice sexual intercourse in ordinary married life. Under such conditions, the results, so far as my experience goes, seems to be but little, if at all, different from what they would be if coitus were indulged in. In this opinion I am aware that I am at variance with many of my colleagues who regard the effects of coitus and masturbation as not being identical. Act for act, I believe my position is correct; the danger in masturbation is the frequency with which the act can be performed in comparison with sexual congress; if a man could cohabit as frequently as he can masturbate the risk would be as great, because the nervous exhaustion would be as marked and as continuous, and that is the danger point in both cases. Another reason assigned for the difference in effects is the sense of shame attending masturbation which tends to depress the nervous system and injure the patient's morale. To a limited extent this is true; for, after coitus, the man is rather proud of his performance and glories in the sense of sexual power; but all masturbators are not by any means 'broken up' by their habit. Some regard it as a choice between two evils, and while deploring the necessity, they think it is a safer alternative than running the chance of contracting a venereal disease. In this class of subjects, as well as in others that have been mentioned, much depends upon the natural physical condition of the patient; some men are naturally more vigorous, sexually speaking, than others, and are much better able to stand the reaction and slight exhaustion which follow even the normal performance of the sexual act, and in these cases it may be said that the habit produces very little if any bad results. While by no means apologizing for nor excusing indulgence in this evil habit, it may be said, taking into consideration the risk attendant upon intercourse with public women, and of the chances for contracting disease, that these patients perhaps pursue the wisest course,

if it be positively necessary that they should indulge their sexual passions. This habit of masturbation, when it produces evil results, produces them from three reasons; one, because the physical condition of the patient is not sufficiently strong nor well enough established to resist and to overcome the nervous exhaustion which follows; two, because from the fatal facility with which the act may be performed, the continuous practice produces a continuous exhaustion and the victims have no time to rally between the performance of each individual act; and three, because the feeling of disgust and fright which has been induced in the patient by the lurid pictures drawn by well-meaning but injudicious friends and relatives tends to beget a nervous depression and hypochondria out of all proportion to the real injury done by the habit."

A better presentation of the evils resulting from masturbation in the years preceding full maturity is given by Dr. Grant Hague:

"If the habit is persisted in, the muscular system suffers,—the muscles become weak and flabby; the patient develops weariness and languor and loses his mental and physical vigor. He is no longer forceful or energetic, his efficiency is impaired and as a consequence his nervous system begins to show signs of depleted strength. He cannot concentrate his thoughts, he falls behind in his studies, his mental effort is sluggish, he becomes diffident and shy, shuns society, loses confidence in himself, is morbid and emotional and may even think of suicide.

"It is astonishing how indulgence in this habit may affect the moral nature of a boy. First of all he is no longer frank and open, he becomes shifty and suspicious and will not look you squarely in the face. A boy cannot become a slave to this habit without it affecting his mind. He invites debasing thoughts,—the old pure and clean methods of thought and living no longer satisfy,—his imagination even becomes corrupt and his moral nature and moral sense is perverted until he no longer seems to be able to tell the difference between right and wrong. He has little regard for the truth and if occasion demands it will lie without appreciating the dishonorable part he is playing. In the end his will power is lost—even the effort to save himself is too feeble to succeed—he is a slave to the habit, his health and strength are ruined.

"If every boy could realize the possible end of this evil habit he would make an effort to rid himself of it before he becomes its victim and its slave. It may be easy to abandon the practice in the beginning; the longer he continues it, however, the less chance he has of finally mastering it, until, if he persists beyond a certain point it is a matter of serious question whether he will ever be able to free himself from its grip. If the boy has lost the will power to carry out his resolves, no number of good desires or resolutions will avail. And it is just this will power that the wasting of the semen saps little by little away.

"He will show it in this manner, he will not be free and open, he will want to be by himself; later he will show the effects of the abusive treatment he is subjecting himself to in his appearance, he will be sunken-eyed, pimply-faced, pasty-skinned, sneaking, silent, unmanly. No mother can

fail to note these signs and she should suspect the cause and take steps to tactfully reach him before he has ruined his health absolutely.

"We would advise regular exercise of a vigorous kind. Tire out the body so that sleep may be sound. Cold baths, followed by brisk rub-downs; no intoxicants, light meals, plenty drinking water morning and night; the bowels should be regular every day, he should sleep alone on a hard bed in a well-aired room with light covering, he should keep busy every minute of the day and he should not think of himself at all.

"The boy must realize that his salvation rests with himself. After he knows the real danger which the habit carries with it he must be on his guard every moment to abstain; if he does not he may rest assured that the practice will ruin his health, render him a business failure and deprive him of all happiness during the rest of his life.

"Night Losses or 'Wet-Dreams.'—A so-called wet-dream is an unconscious emission of semen during sleep. The discharge may or may not be accompanied with an erotic dream.

"After a certain age—which may be from the twelfth or fourteenth year—a boy may discover that he has discharged some substance during his sleep. He finds the discharge on his night clothes and it naturally puzzles him greatly. He may be entirely unconscious of the whole proceeding, having slept soundly during the night, or he may wake up to find the fluid actually discharging.

"If a boy has not been told of this phenomenon he may regard it as a form of self-abuse of which he may have heard and as a consequence he may worry himself sick, as the night emissions continue to occur from time to time. Many pure-minded boys have been rendered miserable, and their efficiency and health have suffered as a result of just such an experience. It is therefore proper that they should fully understand the true significance of these occurrences.

"*Causes of Night Emissions.*—I have explained how nature makes a man out of a boy. During this maturing process the testicles are very active organs—their function is to manufacture or secrete the fertilizing fluid or semen. This maturing process begins actively, as I stated, about the age of fifteen, though in some boys it frequently occurs earlier, sometimes as early as the twelfth year. When the testicles begin to grow at this time they manufacture more semen than the little pockets can hold, so nature adopts the method of permitting the surplus to escape during sleep. These night emissions therefore are perfectly natural losses, and need cause absolutely no distress of mind whatever. The frequency with which they occur depends altogether upon the temperament of the boy. If the boy is a strong, active, athletic boy, they may not be so frequent in him as they may be in a quiet, studious boy. The system of the athletic boy seems to utilize more of this surplus than the quieter existence of the studious boy calls for. If the discharge does not occur oftener than every two weeks, it may be regarded as normal and natural. Should they become more frequent than this, the boy should inform his mother or father and the family physician should be consulted. It may be that he is in need of a tonic, or special instructions regarding his method of living and

his mode of exercising. Whatever the cause may be it can be corrected, and the best plan is to give it attention as soon as it is noted that the losses are too frequent." (Hague, The Eugenic Mother and Baby)

Dr. Malchow (Sexual Life, pp. 90-93) seems to minimize the physical evils resulting from masturbation: "However pleasing the sensations which lead to ejaculation may be, and notwithstanding the frequency and tremendous force of the sexual promptings and youthful exuberance, yet these artificial emissions are, like the spontaneous discharges, regarded with displeasure and naturally evoke secrecy, shame and disgust.

"Such discharges are also the source of the most formidable self-reproaches which manhood prompts.

"The moral sense makes fear of detection dreadful, and the common belief in the injuriousness of the practice occasions the most horrible reflections in the mind of the growing youth, which tend to lessen somewhat the frequency of repetitions but which, powerful as they are, are yet inadequate to counteract the natural inclinations and permanently prevent recurrences during the earlier years of adolescence.

"There is no one thing that causes the average boy in his teens so much misery and induces suffering from the pangs of conscience in his thoughtful moments, as the knowledge of his own solitary or artificial sexual practices.

"Oftentimes these reproaches are prolonged into middle life and occasionally old men still attribute their ailments to what is termed youthful folly.

"It is exceedingly hard to tell just how far admonition shall go, but it should not be carried to the point of so thoroughly frightening the youth as to destroy his morale and pluck. Nothing does this more readily than the false and fabulous stories which are told about the consequences of this habit.

"Young lives are blighted and brilliant careers prevented by withholding the truth and grossly exaggerating or misstating the natural results of this habit.

"Many men can look back upon their earlier lives and realize that the consequences of self-abuse were pictured to them in the most appalling colors and the efforts of their parents and teachers, with the kindest intntions, did more harm than good by their attempts to stop it. They subsequently, under conditions forgetting the past, find to their great astonishment that their powers are good and this proves to be their salvation. The knowledge of their retained manhood puts new life into them and convinces them that the statements of kindly disposed persons were erroneous, and they become sound men.

"The very fact that artificial emissions are disgusting makes approaching manhood rebellious and prevents their frequency, while the increasing years bring added knowledge and maturer judgment.

"Those whose nervous systems are naturally below par, or are already injured, most easily become habituated to this practice and indulge more immoderately than others, but the principal source of its evil is in the self-reproach and the struggle with the impulse.

"When actual sexual experiences have been had, or normal relations have been established, these practices are usually discontinued, except perhaps in some instances, when they are resorted to in order to relieve a distressing tension which experience has proven may by this means be overcome.

"The pulpit, the press, and medical literature as well, are wont to vividly depict most horrible results and ailments which are attributed to youthful sexual practices.

"Insanity and scores of nervous and physical diseases are said to directly result from this sole cause.

"No evidence can be produced to warrant such statements for though these conditions may be found in connection with such acts, yet where there is one case in which they occur, there are dozens of cases in which the practice has been quite as frequent and severe which present no permanently serious results, and, therefore, we must look for additional—not to say greater and more prolific—causes.

"One has but to intimate to a credulous, and in this respect a simple young man, that he has committed such acts, and immediately he stands self-accused by his conscience and is convinced of his guilt, while the one who makes the charge runs no risk and, owing to the general prevalence of the practice during adolescence, can hardly be wrong.

"Designing doctors and those who are sincere, but in this respect misguided, are responsible for immeasurable mental distress and suffering among young men, who are led to believe they are one among a very few who have indulged, and who do not know that the remainder of the sex has been subject to a similar experience.

"If we look further for the causes of the general misconception of these facts, which society seems to entertain in this regard, we find that men are naturally averse to frankly discussing this matter."

Dr. Malchow, ibidem, sums up his conclusions thus: "Honest judgment and frankness demand the statement that in healthy and well-born individuals, spontaneous and artificial seminal emissions, or simple masturbation, produce in themselves no bad physical results beyond some transient functional disturbances, and these are only considerable when the practice has been excessive.

"We deplore the fact that we cannot consistently say something worse for a practice which is so nasty, disgusting and repulsive, but withal so general, and we hasten to dismiss the subject with alacrity."

Dr. Frank P. Davis (Impotency, Sterility and Artificial Impregnation) declares thus: "Perhaps more has been written about masturbation than any other sexual subject. It has been held before the youth of the land as the most dangerous habit that one could acquire. Fearful are the results that follow this habit, even if indulged in to ever so limited extent, if we are to believe the writers of a century ago, as well as non-medical writers of later date. It is easy to form the opinion that insane asylums and feeble-minded institutions are maintained solely because of this habit, if we believe these writers.

"While I do not want to minimize the bad results that may and sometimes do follow the habit if indulged in to excess, yet, masturbation, if not practiced to excess is no more injurious than is coitus interruptus. In fact the latter habit is really more injurious when indulged in to the same extent. Coitus interruptus has the added evil that it affects both the male and female. Many of our worst cases of neurasthenia may be traced to the latter habit.

"The injury of the male by masturbation lies in the loss of the glandular secretions, which if one is continent are absorbed by the blood and lymph streams and carried to the muscles, brain, and spinal cord, there to produce their magic power.

"When these secretions are discharged they are lost, and, if the loss is excessive it will soon be felt in the weakness of the system, inability to concentrate the mind, and irritableness. Boys and young men, while in school, should conserve the vital force as much as possible, as they require all the vital energy they can obtain to support the growth of the body and the strain on the brain and nervous system due to study.

"Masturbation and coitus interruptus are more injurious to the system than normal and complete coitus because of the fact that there is a psychic impulse received from the partner in the normal act which is absent in the interrupted act.

"The action of the secretions from the Bartholinian glands upon the male organ is well known, and it is not unreasonable to believe that the secretions from the male will have a similar effect upon the female. In coitus interruptus not only is this effect lost, but there is a decided nerve shock to both parties. This soon leads to neurasthenia and despondency.

"Sturgis holds that nocturnal pollutions are not injurious, and that emissions in the natural sleep are not cause for alarm. On the other hand, he says that where involuntary pollutions occur during the day it is very injurious. My experience in treating this class of cases leads me to believe that the physical and mental depression is due to the loss of the secretions, and the depression must follow an excessive loss regardless of the hour that the loss takes place, and the greater the loss, the greater will be the depression.

"The really virile man is the one who conserves his testicular secretions that they may go to build up and charge with vim and vigor the muscular system and the brain. The hard worker will use up more than the man of leisure, and it is well known that the latter furnish the greater per cent. of our cases. The good liver, who does but little work, either physical or mental, and is more or less constantly in the company of women will frequently store up an excess of these secretions, then if not relieved through masturbation or coitus, nature will relieve the congestion by discharging through the urethra. In this connection man may be compared with a steam boiler. When the pressure of the steam in the boiler becomes too high it is permitted to escape through the safety valve. In the normal man, the excess is discharged by emissions. The man of leisure can stand a greater drain by sexual excesses than the one who does exhausting mental or physical labor, as his system will only take up so large

an amount of the secretions. If, however, the spring of the safety valve on the boiler should become so weak that it would not hold the pressure the steam would escape as fast as generated and there would be no power come from the boiler. In the case of the man if there is a weakness that permits a continual loss of semen he will become weak, discouraged and despondent. There is also a similar condition in women. An excessive secretion from the Bartholinian glands and the uterus greatly weakens the woman, and is followed by conditions similar to those found in men. We see that masturbation and sexual excesses are very injurious to women, when they reach the stage of excitement where there is a discharge from the glands, or an orgasm. Women frequently experience the sensation of a discharge from the Bartholinian glands when dancing or when being caressed. We often see young women who are engaged or keeping company with a man, becoming weak, nervous and listless, and girls who dance complaining of feeling weak and irritable the day following the dance. This is due to the overexcitation of the sexual organs and the loss of the secretions.

"I cannot agree with those writers who claim that as there is no seminal discharge there can be no injury to the woman from masturbation, other than that due to reflex nervous conditions. I am convinced that the evil result from masturbation in the female is fully as great as it is in the male. The loss of the secretions from the female organs is nearly as depressing to her as the loss of semen is to the male. Women experience a discharge from slighter stimuli than do men. It may be brought on by dreams; by kissing; by contact with the partner in the dance, and by pictures, stories, and day-dreams. Women frequently confess to becoming 'wet' (discharge from the Bartholinian glands) when their breasts come into contact with their partners in the dance.

"The treatment of these conditions calls for a removal of the cause as far as possible. If there are emissions or pollutions we usually find that the safety valve spring is weak, hence tonics are indicated. The young woman who is engaged and experiences a feeling of weakness and becomes despondent and irritable should be advised to hasten her wedding day. The girl that dances may be advised to refrain from the dance. The latter case as well as all masturbators should be placed upon sedatives. Salix nigra aments persistently used will control most of these cases. The hooded clitoris must be unhooded. The elongated foreskin should be abbreviated. After the causes of irritation are removed, sedatives should give relief. Circumcision in itself will not prevent the boy from masturbating, but it is often necessary to perform the operation before we can secure any lasting benefits from our treatment. On the other hand the circumcision of girls is generally followed with a discontinuance of the habit, and their health and dispositions show a great improvement."

Capellman (Medicina Pastoralis p. 69) presents to us a still more dreadful picture of the evils of masturbation: "The vice is most common with boys and youths, but it can not be denied that it is prevalent even amongst young people of the other sex. These unfortunate creatures of both sexes, with languishing, confused, and timid glances; sunken and

blue-encircled eyes, their faces pale, puffed and wan; their hands perspiring, and flabbily hanging down; their knees weak and easily bending; with such wretched carriage and constant inclination to sit or lean against some support,—these stupid beings of thoughtless, absent, morose disposition, we meet, alas! too often. They hide away in any retirement, become timid, full of apprehension, dislike the joyous pleasures of youth, and anything like serious mental activity, lie in bed of a morning, and become emaciated and stunted in their development. Later on, they are affected with involuntary passive pollutions, with frequent swoonings, tremblings, and palpitations of the heart. Finally the vice is attended with incurable conditions of general decline, of dropsy, epilepsy, and, in some cases, with spinal consumption. In the female sex, it becomes the occasion of various disorders of the womb, and of hysteria. Add to the above the tortures of remorse, and fear of the consequences, physical as well as moral, of these practices which they cannot leave off. Thus these unfortunates become, not infrequently, melancholy, and, at last, mad. Their depression of spirits becomes intolerable, and often their lives end in suicide.

"Such, in general, is a picture of these unfortunates, who are by habit addicted to this nefarious practice. But not all these symptoms, or at least not in so pronounced a manner, characterize every case. Some persons have their nervous system shattered in a less degree, although they may have practiced self-abuse for many years. And, on this account, it is not wise to depict the consequences of this vice in too vivid colors, lest the sinner may give the lie to his monitor. There is another reason which renders it desirable to exercise great care in cautioning young people against this evil. It is, that many an unfortunate to whom our cautions are addressed may be already a prey to depression of spirits, partly in consequence of the weakening of the nervous system, partly in consequence of remorse and shame; and again the genital organs become, from frequent and unnatural excitement, morbidly sensitive,—so much so, that the depressed mind and enervated will are not equal to the subduing of the bodily desires. The corrupted imagination, filled with voluptuous pictures, scarcely admits of any other interest, and it requires, if the evil has made any progress, very severe struggles to abandon this vicious habit; indeed, without higher religious motives, such men are seldom converted. It is obvious that the utmost discretion should be used in endeavoring to dissuade men in such a condition from this pernicious vice. Earnest, but, at the same time, kind and consoling words, calculated to sustain the moral strength, will best answer the purpose. Due consideration must be given both to the existing cause and to the circumstances exciting to this sin, and a rule must be laid down in accordance with them. Medical treatment is not within the sphere of the priest. If there are signs of failing health, then the penitent should by all means be referred to a physician; indeed, he should be always counseled to take medical advice about the manner of living best suited for his personal condition, in order to reduce excitability, and to support his moral endeavors to overcome this vice."

Dr. R. von Krafft-Ebing declares thus:

"Nothing is so prone to contaminate—under certain circumstances, even to exhaust—the source of all noble and ideal sentiments, which arise of themselves from a normally developing sexual instinct, as the practice of masturbation in early years. It despoils the unfolding bud of perfume and beauty, and leaves behind only the coarse, animal desire of sexual satisfaction. If an individual, thus depraved, reaches the age of maturity, there is wanting in him that aesthetic, ideal, pure and free impulse which draws the opposite sexes together. The glow of sensual sensibility wanes, and the inclination toward the opposite sex is weakened. This defect influences the morals, the character, fancy, feeling and instinct of the youthful masturbator, male or female, in an unfavorable manner, even causing, under certain circumstances, the desire for the opposite sex to sink to nil; so that masturbation is preferred to the natural mode of satisfaction.

"Sometimes the development of the nobler sexual feelings toward the opposite sex suffers, on account of hypochondriacal fear of infection in sexual intercourse; or on account of an actual infection; or as a result of a faulty education which points out such dangers and exaggerates them. Again (especially in females), fear of the result of coitus (pregnancy), or abhorrence of men, by reason of physical or moral defects, may direct into perverse channels an instinct that makes itself felt with abnormal intensity. On the other hand, premature and perverse sexual satisfaction injures not merely the mind, but also the body; inasmuch as it induces neuroses of the sexual apparatus (irritable weakness of the centres governing erection and ejaculation; defective pleasurable feeling in coitus, etc.), while, at the same time, it maintains imagination and libido in continuous excitement.

"Almost every masturbator at last reaches a point where, frightened on learning the results of the vice, or on experiencing them (neurasthenia), or led by example or seduction to the opposite sex, he wishes to free himself of the vice and re-instate his vita sexualis.

"The moral and mental conditions are here the most unfavorable possible. The pure glow of sexual feeling is destroyed; the fire of sexual instinct is wanting, and self-confidence is lost; for every masturbator is more or less timid and cowardly. If the youthful sinner at last comes to make an attempt at coitus, he is either disappointed because enjoyment is wanting, on account of defective sensual feeling, or he is lacking in the physical strength necessary to accomplish the act. This fiasco has a fatal effect, and leads to absolute psychical impotence. A bad conscience and the memory of past failures prevent success in any further attempts. The ever present libido sexualis, however, demands satisfaction, and this moral and mental perversion separates further and further from woman."

Garnier is very severe in enumerating the evils of masturbation. In addition to physical evils, he describes the mental effects: "Onanism rapidly blights, weakens, paralyzes the mind centers. It even destroys them, thereby dragging down a vast number of its victims to idiocy, dementia, and insanity without any apparent or knowable lesion. As a direct or indirect effect of its various nervous derangements, as epilepsy, melancholy or hypochondria, general paralysis, there is a moral collapse caused by the

physical collapse before death, the common dishonorable end of the excesses, the abuses, the vices of humanity."

Garnier also enumerates among the effects of masturbation disease of the prostate gland and a weakening of the seminal vesicles. The masturbator's semen flows through slight sexual excitement. His sexual organs are flabby and supersensitive.

Burdach (Karl Friedrich Burdach, German physiologist, 1776-1847) declares:

"Not so much through the loss of the semen, but by the shattering of the nervous system (masturbation) induces atony of the genital organs, spermatorrhea, weakness of the bladder, atrophy of the spinal column, tremor, convulsions, paralysis, dulness of vision, deafness, feeble memory, lack of concentration, the blunting of the finer human sentiments, idiocy, and insanity."

Tissot, in his classic monograph on masturbation, published in 1774, regarded masturbation as one of the greatest of evils. Debreyne declared it to be a "destructive plague, a horrible cancer, which devours alive the youth of both sexes."

Max Hühner gives a moderate view:

"As stated before, it is a pity that because so many medical quacks have, for their own personal interest, so exaggerated the symptoms of masturbation in the 'literature' which they scatter broadcast, many regular physicians consider themselves bound, in order to offset this bad influence, to deny any importance to the subject, which seems to have just the opposite effect on the patient,—to-wit, it has the tendency to drive the patient to the very quacks who ought to be avoided.

"In giving the symptoms of masturbation it is hard to take the middle course and avoid the exaggerations of the quack on the one hand and the indifference of many physicians on the other. There are some physicians, however, especially among the Germans, who seem to be so carried away with the importance of the subject, that in their enthusiasm they outdo the quacks and refer every ailment under the sun to the evil results of masturbation. Listen, for instance, to Steinbacher, who gives in his work as the results of masturbation the following ailments: Insanity, blindness, indigestion, melancholia, hypochondriasis, squint, sleeplessness, headache, dizziness, itching, abnormalities in the senses of taste and smell, stuttering, angina pectoris, palpitation of the heart, a dry cough that may be mistaken for tuberculosis, asthma, pains in the feet, knees and hands, epilepsy, chorea, spasms or paralysis of the muscles of the bladder, impotence, etc.

"Those who have studied the subject from every possible point of view can understand how a reputable physician and an author can obtain this long list of dire complaints as a sequence to masturbation. I have elsewhere already pointed out the mistakes in these authors, but this particular point is so important that I may be pardoned for repeating it here. Masturbation is so very common in early childhood that if we take, for instance, the histories of a large number of cases of insanity or chorea, or almost any other trouble, we shall find a very large percentage of early masturbation, but this by no means indicates that masturbation per se

was the cause of insanity, etc. It is in this way that enthusiasts allow themselves to be betrayed into blaming every defect on masturbation. I am certain that if we were to take the histories of 100 of the greatest geniuses we would find in over 90 per cent. of them a history of masturbation.

"Again, in taking the histories of these cases there is still another error which we must be careful to avoid. We must not suggest any symptom, but allow the patient to tell his own story without interruption. We will then often find that he repeats them by rote as he has read them either in the advertisement of some quack in public newspapers, or from one of the many books that are so freely distributed in the city. It will therefore be evident that the symptoms just heard in such a case cannot scientifically be put down as the symptoms of masturbation, and it is to detect this possible source of error that I never interrupt my patient, so that I may be able to recognize the symptoms suggested by what he has been reading.

"After deducting all these exaggerations and sources of error, we will still have certain symptoms and conditions and sequelae of masturbation which are genuine and real, and not the result of imagination or suggestion. I cannot help repeating here that the symptoms and sequelae of masturbation actually exist, and it is harmful to imagine that they can be talked out of the patient and are only imaginary. I shall now attempt to describe them calmly and without exaggeration as I have actually seen them in my clinics and in private practice.

"The patient, as before stated, according to our arrangement is first seen by the neurologist. It is significant in itself that he picks out the neurological rather than the genitourinary clinic. He presents himself complaining of various nervous symptoms, very often not knowing or suspecting what the cause is. Doctor Abrahamson informs me that the symptoms which make him suspect, in the absence of other causes, masturbation as the etiological factor, are those of cerebral exhaustion,—to-wit, delayed or at times incoherent associations; difficulty in recalling names or things; inability to express themselves as well as before; frequent loss of the thread of thought, and incapability of continued effort. The feeling tone is changed and they are disagreeably affected by slight and insufficient causes.

"The most prominent of these is loss of memory. There are few masturbators who, if they complain at all, do not complain of it. I have often made a psychic investigation of this very common symptom and have come to the conclusion that, strictly speaking, there is really no loss of memory whatsoever, but that the events are crowded out of the brain by the day-dreams or self-consciousness of the patient. The masturbator is essentially a dreamer, and in using this term I do not at all wish to use it in the spirit that the term 'dreamer' is often used; I do not mean the word 'dreamer' as it is often applied to men of great ideals, but I mean it in its literal sense. The masturbator is shy and bashful, exceedingly self-conscious; he thinks everyone can read his condition, becomes a recluse, and he compensates for the loss of outside society by self-communion —in other words, by day-dreams. This introspection absorbs his entire

attention. It is for this reason that he thinks his memory at fault, but the real reason is, not that he forgets, but that he does not observe, or pays too little attention to things outside of his self-thoughts. That there is no real loss of memory is proved by the fact that the masturbator can remember if he wants to. I have many cases of masturbation among college students and upon inquiry have found that they rank just as high in their work as the average,—in fact, some have received honors and prizes for their work, whereas if there were any loss or serious impairment of memory they could not have got along at all. As a matter of fact, masturbation is not incompatible with great genius.

"Another symptom that many complain of is pain or weakness in the muscles of the thigh and legs. Still another common symptom is pain in the eyes, also headache and dizziness. One must be careful to interpret these symptoms correctly, or else harm may be done. For instance, while there are very many masturbators who complain of eye pains and dizziness, so that these can often be ascribed to the disease under consideration, we must not so ascribe them, in any individual case, until the eyes have been examined by a competent ophthalmologist to exclude errors of refraction. And so it is with all the symptoms complained of; before we blame them on masturbation we must be certain that there is not a more real organic basis for them. As stated before, it is just a neglect of this precaution that leads writers into the error of ascribing a long list of ills to masturbation. It must be remembered that the masturbator is exceedingly introspective and likes to blame every trouble he has on his 'youthful sin.' If he is constipated, or has distress after eating or anything else, he is sure to blame it on masturbation.

"Coming now to the symptoms of the genitourinary tract, we find first and foremost a marked hyperesthesia of the entire urethra, and especially of the prostatic portion. This condition is always present and is almost pathognomonic of masturbation. I have in the course of many genitourinary examinations examined many urethrae, but in no condition of the urethra, whether due to the presence of a foreign body, to the irritation of a very strong injection, to a tight stricture or what not, is the sensitiveness as evinced by the pain it caused to be at all compared to that which we find in the chronic masturbator. This sensitiveness is very important not only from a symptomatic point of view, but also from a therapeutic and prognostic point. The sensitiveness is our most important guide to the frequency of treatment, to the strength of solution to be used, and also to the cognizance of cure or cessation of all treatment.

"Hand in hand with this hyperesthesia of the urethra, and dependent upon the same cause is the hyperesthesia of the prostate gland as examined per rectum. Here again the hyperesthesia is extreme, even if the gland is not markedly enlarged. I have made it a point for many years to examine the prostate per rectum as a routine in every genitourinary examination. I have thus made many examinations in acute and chronic urethritis, in acute and chronic prostatitis, in prostatic abscess, etc., but in none of these conditions is the prostate as sensitive as in cases of masturbation. As a

general thing the prostate is enlarged, but not necessarily so, and it is always hyperesthetic.

"It is a very common error to consider that masturbation is always accompanied by pollutions, using the latter term in a general popular sense, without distinction whether spermatozoa are present in the discharges or not. I cannot, however, too emphatically state that masturbation and pollutions are entirely distinct conditions and have nothing to do with each other. While some masturbators also suffer from pollution, still in a very large number of cases patients may masturbate without ever having had any pollutions.

"It is also a mistake not to think of masturbation because the patient is a married man. In a small percentage of cases married men masturbate in addition to performing sexual coitus. I have one patient who is so passionate that during the time his wife is indisposed he relieves himself by masturbation. There are also married men who experience more pleasure from masturbation than from regular sexual intercourse. There are masturbators who get married or practice illicit connection, upon advice, medical or otherwise, with the idea of curing their masturbation; but this does not succeed and they continue their practice in addition. This is a very important point and will be again referred to under treatment. There are also married men who, while their wives are temporarily absent, practice masturbation.

"Again, it is a mistake not to think of the possibility of a chronic gonorrhea in a case of masturbation. This is also important, for if we do not recognize it, we may, by treating the patient for masturbation, light up his old gonorrheal infection and make matters worse. There are masturbators who, as previously stated, think of curing their trouble by coitus and thus acquire gonorrhea.

"But all these special symptoms, which we have tried to analyze in detail, give but a poor and inadequate picture of the confirmed mastubator. The confirmed mastubator is apt to be a physical coward, a man who will stand all sort of insult, who will run away rather than fight or stick up for his most obvious rights. All the spirit of manhood seems to be crushed out of him. He is very often praised for his gentleness, for his saint-like demeanor, his humility, etc., but if we carefully study the individual, if we dive into his thoughts and make a psychical study of them, we will find that these traits are not virtues. We will find that he feels his wrongs as keenly as another, that he makes plans of revenge in his mind which he would fain carry out, but which he has not the energy to undertake and is too much of a coward to attempt. He is good, not because of any virtue, but because he is too much of a coward to be bad.

"As before mentioned, the masturbator is essentially a dreamer, that is, he is very much occupied with his own thoughts and is very shy and bashful in his relationship with the outside world. He is especially bashful in the presence of females. He feels his condition keenly. Sometimes he attempts coitus with a view of curing his condition, and is often unsuccessful. Frequently, instead of masturbating with his hands he masturbates with his brain,—that is, he calls up vivid pictures (psychic masturbation)

and so causes erection and ejaculation. These cases of psychic masturbation are the most difficult cases to cure, and the psychic form lasts for some time after the regular form has been abandoned.

"And so he continues year after year; the number of times he masturbates varies greatly with the individual, but it is astonishing sometimes to hear how many times a day and for how long a period he can keep it up. It is this frequency and the fact that he needs no special preparation or place of convenience that constitutes one of the great differences (but not the only one) between masturbation and normal coitus.

"It is really remarkable how much insult the sexual apparatus will stand before it rebels. If coitus were practiced nearly as often as some of these patients masturbate, the result might possibly be much more disastrous.

"But after a while he comes to that stage where he masturbates, not because he likes it, but because he has to. He has that awful irritation in his deep urethra, and he simply must masturbate. The periods of previous excitement (pleasure) become less and less, as does also the amount of fluid ejaculated. Then there comes a time when he cannot masturbate. He has the irritation, he has the impulse to masturbate, but no matter how he manipulates his penis or how he excites his brain, he can neither obtain an erection nor an ejaculation. He is indeed in a most wretched condition.

"But long before this stage is reached his nervous system has been severely affected. He has tremor of the hands, excessive perspiration, pains all over, various mental symptoms (vide supra),—in fact, the amount of reflex nervous disturbance is most varied. His digestion suffers; he becomes morose and inattentive. He tries coitus and finds himself impotent, but may however contract venereal disease. He has tried many times to break himself of the habit, but invariably fails. He may have made the rounds of the various advertising quacks and found no relief. He then falls into despair and thinks there is no remedy for him and that he is doomed to perpetual suffering. It is useless to talk to a confirmed masturbator of self-control, because he cannot control himself.

"I have attempted to describe without exaggeration the course of masturbation as I have seen it in dispensary and private practice. It is, however, not every case that goes on to this very last condition. The disease may be halted at any stage by treatment. I have attempted to give a general description, but no one description will fit every case. The number of reflex phenomena are as numerous as the various functions of the nervous system."

"There is not a vice more fatal to the conservation of man than masturbation." (Dr. H. Fournier of Paris)

"Self-abuse causes the waste of a vital substance, a fluid which, when not uselessly spent, re-enters the blood, at least in part, to give it fire and energy.

"But very soon this waste takes place, not only directly, but indirectly. Emissions occur frequently of a night without any manipulation. By and by they take place day and night involuntarily, without handling and without pleasure. THERE IS THUS SET UP A REGULAR DRAIN OF SEMI-

NAL MATTER WHICH RAPIDLY BRINGS ON EXHAUSTION. This exhaustion will often induce or promote CONSUMPTION, and even in the strongest frames it will END IN NERVOUS AND MUSCULAR DEBILITY, with a long train of real and imaginary pains and evils, and while injuring the body, this vice has an equally baneful influence on the mind. The imagination becomes polluted, the thoughts defiled, the dreams impure, the will weakened, and the whole intellectual and moral life revolves in uncleanness. In the course of a short time the subject of this wretched habit is unwell in body and unwell in mind, without ambition, without energy, and without courage, thoroughly demoralized, fit for nothing." (Gatterer-Krus)

There is a species of masturbation called by sexologists masturbatio interrupta. By pressing forcibly upon the line of the urethra just in front of the anus immediately before and during orgasm the flow of semen is inhibited. This form of the vice has all the evils of masturbation plus the evils of coitus interruptus.

In recent times there has been a tendency among medical men to depreciate the evils of self-abuse. Some of these physicians are conscientious men who mean to counteract the pernicious propaganda of the quacks and venders of patent medicines.

Sir James Paget declares:

"Masturbation does neither more nor less harm than sexual intercourse practised with the same frequency in the same conditions of general health and age and circumstance."

"Erb and Curschmann go even further; for they consider that masturbation has less influence on the nervous system than coitus. In reality, however, masturbation is almost always more harmful than coitus. The reasons for this are obvious. In the first place, masturbation is begun much earlier, generally at an age when the body has not yet developed any marked capacity for resistance. Masturbation in childhood is, therefore, especially harmful. Löwenfeld is of opinion that self-abuse begun before virility is attained more readily gives rise to weakness of the nervous system than masturbation begun later in life. In neuropathic children he saw several times, as a consequence of masturbation, well-marked general nervousness, paroxysms of anxiety, sleeplessness, and arrest of mental development. In the second place, masturbation is more dangerous than coitus in this way—that it can be carried out much more frequently, on account of the more frequent opportunities, so that masturbation four, five, or even more, times in a single day is by no means rare. In the third place, the spiritual influence of masturbation is much more harmful than that of normal coitus. The 'solitary' vice influences the psyche and the character in the mere child. The youthful masturbator seeks solitude, becomes shy of human beings, reserved, morose, unhappy, hypochondriacal. In the adult the sense of the debasing character and of the sinfulness of masturbation is much more lively; self-confidence departs; the masturbator regards himself as absolutely 'enslaved' by his vice, the eternal struggle against the ever recurring impulse gives rise more to mental depression than to actual physical harm. From this there results a whole series of diseases of the will, for by masturbation much less harm

is done to the intellect than to the vital energy, the capacity for spiritual and physical activity. The cold, blasé manner of many young men, who seem never to have known the natural youthful joy of life, the whole 'demi-virginity' of modern young girls—all these are without doubt dependent upon masturbation and upon psychical onanism. The egoism of the onanist in the sexual relationship increases his egoism in other respects, gives rise to cold-heartedness, and blunts the more delicate ethical perceptions. Th campaign against masturbation as a group manifestation is eminently a social campaign for altruism; it insists that young people should take their share in all questions relating to the common good. Peculiar extravagances and unnatural characteristics in art and literature may also be attributed to masturbation. Many works clearly bear its imprints. Thus Havelock Ellis rightly refers in this connection to the peculiar melancholy in Gogol's stories, for Gogol masturbated to great excess. It would be possible to mention also certain writings of our own time which inevitably give rise to such a suspicion.

"The reader will do well to consult the interesting discussion of masturbation from the philosophical standpoint by Schopenhauer ('Neue Paralipomena,' ed. Griesbach, pp. 226, 227).

"The physical consequences of immoderate and habitual masturbation may also be really serious. The eye especially suffers manifold injuries, as has been proved by the investigations of Hermann Cohn. Irritable states of the conjunctiva, subjective sensations of light, and photophobia, may result from masturbation. The heart also is sympathetically affected. Krehl even speaks of 'masturbator's heart' as a consequence of the long-lasting nervous hyperexcitability, which injures the heart and the vessels, and is manifested by irregularity of the pulse and by sensations of pressure and pain in the cardiac region, by palpitation, etc. Discontinuance of the habit leads to an immediate disappearance of all these alarming symptoms. Very important is also the causal connection between masturbation and nervous or mental disorders. Here, however, as Aschaffenburg has recently insisted, we must distinguish clearly between masturbation resulting from previously existing nervo-psychical troubles, in which a vicious cycle develops—for here the masturbation is partly the consequence of the original trouble, partly the cause of an aggravation of this trouble—and the effects of onanism on the healthy central nervous system. Here Aschaffenburg is in agreement with the views of those who consider that these effects are less serious than earlier writers were accustomed to assume. Aschaffenburg also recognizes that the most harmful effect is to be found in the psychical influence of masturbation, in the continous, but ever-vain, contest against the habit. This is the source of the majority of the hypochondriacal and other troubles. He often succeeded, by the discovery of this psychical mode of origin, in putting an end to a number of morbid manifestations. As soon as the patient becomes aware that these have a purely mental cause, he at once feels himself freed from them. That masturbation is never a direct cause of mental disorder is now generally recognized by alienists. At the most, masturbation is no more than a favoring element in the production of such disorder.

'Masturbatory insanity' occurs only in those with marked hereditary predisposition, and who already have been extremely neurasthenic.

"But masturbation can unquestionably give rise to purely local changes in the genital organs, such as inflammatory states of the prostate gland, spermatorrhoea, and prostatorrhoea; in disturbances of the menstrual function, and in connection with these phenomena there may appear the morbid picture of 'sexual neurasthenia,' which we have soon to describe.

"A very serious result of onanism (not of Onanie) is the disinclination to normal sexual intercourse to which the habit gives rise, and the production of sexual perversions. The former is more marked in the female sex, the latter more in the male sex. Masturbation is the principal cause of sexual frigidity in women and of a disinclination to normal intercourse. Undoubtedly psychical influences here play the principal part; but also a certain blunting of the sensations of the genital organs by means of excessive masturbatory stimulation. They are no longer susceptible to the normal stimulatory influence of coitus. Moreover, masturbation is often effected by stimulation applied to some definite portion of the female reproductive organs, most frequently to the clitoris or the labia; and these parts are not sufficiently stimulated by coitus. In the male the especially sensitive portions of the penis are stimulated alike by masturbation and in coitus, for which reason man, notwithstanding the practice of masturbation, is much more readily able to obtain sexual gratification in the course of ordinary sexual intercourse. Notwithstanding this, there are also certain peculiar methods of masturbation in the male, the effect of which is not obtained by coitus. In such cases men also may fail to induce the sexual orgasm by ordinary intercourse.

"The close relationship of masturbation to sexual perversion is obvious. The more frequently the onanistic act is repeated, the more the normal sensibility is blunted, the stronger and more peculiar are the stimuli, which must be of a nature diverging from the ordinary, demanded in order to induce sexual orgasm. The content of the lascivious ideas must be varied more and more frequently, and soon passes entirely into the sphere of the perverse. Gradually these perverse sexual ideas become more firmly rooted, and ultimately develop into complete sexual perversions. A classical example of this is the case reported by Tardieu of a man who was in the habit of masturbating seven or eight times every day, and ultimately inflamed his imagination to the point of representing the act of intercourse with female corpses. At length he passed to the practical carrying out of this horrible idea, which had now assumed definite sadistic characters. He arranged to obtain a view of opened female bodies, killed dogs, dug up human corpses—all in order thereby to provide satisfaction for his imagination, which had been disordered in consequence of masturbation, and thus to obtain sexual gratification. In the etiology of pseudo-homosexuality masturbation unquestionably plays a part—a fact to which Havelock Ellis has drawn attention. The Mexican 'mujerados' are trained for paederasty by means of masturbation repeated several times daily. Ideas of bestial intercourse may even be aroused by masturbation. Von

Schrenck-Notzing reports the case of a woman who had masturbated for thirty years and ultimately came to represent to herself in imagination that she was having intercourse with a stallion." (Iwan Bloch)

Iwan Bloch condemns the old rigorous view, but is compelled to admit the deleterious effects of masturbation as commonly practiced.

"At the present day all experienced physicians who have been occupied in the study of masturbation and its consequences hold the view that moderate masturbation in healthy persons, without morbid inheritance, has no bad results at all. It is only excess that does harm; but even excess in healthy persons does less harm than in those with inherited morbid predisposition. I may express the matter in this way: it is not masturbation (Ger. *Onanie*) that is harmful, but *'Onanism'* (Ger. *Onanismus*), that is to say, the habitual and excessive practice of masturbation, continued for a number of years, *which certainly has an injurious influence on health.* The boundary line at which the harmless masturbation ceases and the injurious onanism begins cannot generally be defined. The difference between individuals makes their reactions in this respect very different. For example, Curschmann reports the case of a talented and brilliant author who, notwithstanding the fact that he had masturbated to excess for eleven years, remained physically and mentally vigorous, and pursued his literary labors with notable success. Fürbringer reports a similar case in a University lecturer. The following case, which came under my own observation, shows that even excessive masturbation need not impair health and working powers. A man of letters, forty years of age, probably misled by a nursemaid in the first instance, had masturbated without intermission since the age of five, and since puberty had done so *several times a day, three to ten times,* without any interference with his powers for work. He is a big, powerful, healthy man, of really imposing appearance. No one would suspect him to be a habitual masturbator. That from the masturbation of childhood and youth there developed a condition of formal onanism in the adult is in this case principally to be ascribed to the continued abuse of alcohol. The patient drinks daily twelve to fourteen glasses of Munich beer. He is also a heavy smoker. No evidence of inherited predisposition to masturbation can be obtained. For the patient the female sex exists only in the imagination; he has very rarely had sexual intercourse, and avoids ladies' society, although he has good fortune with women. It is the same with masturbation as it is with sexual intercourse: the effects vary according to the individual. Recently masturbation and coitus have been compared in this respect."

Vecki expresses very practical views:

"We shall meet with altogether different conditions when we make excessive onanism or masturbation the subject of our discussion. If onanism causes degradation of the physical force and impotence much more frequently than excesses in venery, we find the explanation in this difference of all the conditions.

"It is only an exception when excesses in venery can be practiced before the individual has become pubescent, for he generally lacks the means and occasion therefor; onanism, on the contrary, may be practiced by an

undeveloped child, as, unfortunately, is frequently the case. Of course, every sexual excess committed by an individual before puberty is ever so much more far-reaching in its consequences.

"Nature is seldom able to hinder the onanist in his destructive work until it is too late. The onanist wants no erection: he can without it bring about orgasm and ejaculation. The onanist need not wait for time of leisure or for a special place or occasion. He can satisfy his desire in bed under the warm covers, almost under the eyes of his parents and teachers, in the closet, in any dark corner. Some have acquired such dexterity that they can ever add new injury to the weakened sexual organs, which are almost continuously in a state of irritation, by clever manipulations of the penis by the hand introduced into the pocket of the trousers. This can be done at school, at church, at the theatre, at balls and other entertainments, or during a walk in the street or a ride in a carriage.

"The recovery from this condition is more difficult to accomplish, and the ability to desist from further injuring the sexual power is more difficult to acquire, in this case than in the case of excessive venery. The individual is not able to avoid seizing the opportunity to practice his vice. It often takes a long time for the onanist to get a clear understanding of the evil consequences of his actions; but when he does discover his error, a fearful struggle arises between the pernicious, almost overpowering habit and the enfeebled juvenile, who may be a mere child. This struggle is so hard and dreadful that even a vigorous and energetic man might succumb.

"There is yet a weighty circumstance that renders excesses in onanism far more fatal than excesses in venery. The one who commits excesses in venery is ever enamored, feels seldom any remorse about the excess he has committed, but is rather inclined to look upon it as a triumph of his irresistibleness and power. He is satisfied with himself, and draws immeasurable joy from the inexhaustible treasury of love. He is most of the time happy, and his joyous mood contributes largely toward the preservation of a healthy condition of his body. The reverse of this is the case with the onanist: he is always in conflict and exceedingly dissatisfied with himself; he is ashamed of his doings, and regrets to commit what is commonly called a 'vice.' Hence the onanist is ill-humored and melancholic, this state of the mind having an influence which almost without exception produces an injurious effect on the functions of nearly all the bodily organs.

"This one harmful factor in onanism was usually underestimated and by some authors even ridiculed, but is now, the influence of the mind over the body being better studied, also better understood.

"Finally, it must be stated that it is not at all settled whether coition and masturbation are equivalent acts. I doubt it very much, because I know that with individuals accustomed to excess in venery the commission of a single act of onanism leaves them in a weaker and more dejected state than a great excess of copulation. I think that, after all, the circumstances preceding and accompanying ejaculation, and, most of all, certain processes in the nervous system, must be of more consequence in onanism than in copulation, and that these 'circumstances and processes' require a greater effort to be brought about by onanism than by coition, and conse-

quently produce greater fatigue. Hummel thinks that the climax of excitation in masturbation is higher than in the normal intercourse, and for this reason more of an insult to the 'cerebro-spinal centers.'

"Every medical man who thinks about this matter must ask himself whether those authors are right who call onanism a vice. I do not think they are: for if we take into consideration the circumstances under which one falls a prey to onanism, and moreover, the almost insurmountable difficulties encountered in resisting or overcoming the bad habit, we unquestionably must come to the conclusion that onanism should with more justice be called a disease. In the same manner in which one may fall sick without any fault of his, he may fall into the grasp of onanism and be unable to tear himself away even with the greatest effort.

"The most common form of onanism consists in moving with *manu propria* the prepuce backward and forward over the glands until ejaculation is obtained. Sometimes the onanist produces friction of the prepuce against another object, as for instance by lying on his stomach and rubbing against that upon which he rests, thus causing the prepuce to move over the glans; less frequently there is a mutual onanism practiced between two men. This kind of onanism occurs most frequently among persons affected with perverse sexual feelings, but who have not yet sunk to pederasty. Still less frequently there is mutual onanism between man and woman; yet it occurs often enough, and seems to become a regular expedient in matrimony in some countries, whereby the increase of the family is avoided. Lingua et labia are then often used in place of the hands. Thus we see that Freeman's definition: 'Masturbation is the acquiring of all the sensations of sexual intercourse, including the orgasm without the aid of a second person,' does not cover the subject.

"Onanism is not without its vindicators; only they seldom have the courage to speak aloud and publicly in behalf of their belief. In a small circle of pupils, many years ago, I heard a very popular professor say that onanism moderately practised has its advantages, particularly for students, as money and valuable time are saved, all unpleasant connections and obligations are avoided, no one is made unhappy, and there is no danger of contagious diseases. Wall, in his remarkable work on 'Sex and Sex Worship,' expresses some rather advanced ideas on this important question. We can easily agree with him when he says: 'It is a bad habit and a man would do well to avoid it; but it is not to be worried over if he cannot refrain from it.' Most sexologists, however, would hardly agree with Wall when he adds: 'If we eliminate the superstitious dread of sin, then masturbation is the most rational, the most effective and the least harmful mode of gratifying sexual instinct, except coition with a wife.' If considered from a low and egotistic standpoint, these reasons might be correct, if only the onanist were capable of keeping within moderate limits; but it is this excessive onanism that renders it so particularly hurtful."

Brill is a pronounced *Freudian,* but he also admits the psychic evils of masturbation. However he *out-Freuds Freud,* for Freud admitted that, because masturbation is not an adequate sexual outlet, it may contribute to actual neuroses.

Thus declares Brill:

"Personal experience with a great many cases leads me to the conviction that masturbation does not in any way injure the brain or cord, and has no direct pernicious influence on physical health. To be sure, many cases came to me with rather severe nervous symptoms of the 'anxiety neurosis' type, which were attributed to masturbation by the patients themselves. But examination invariably showed that the symptoms were mainly due to psychic conflicts and often to a sudden stoppage of masturbation after a prolonged practice. I could always definitely demonstrate to the satisfaction of the patient that so long as he had no conflicts he was not affected by his masturbation; but as soon as he became aware of the harmfulness of it through, friends, books or lectures, and began to struggle against it, the symptoms soon appeared. Perhaps one of the most typical cases that came to my attention was the following: About six years ago I was asked to see a young student of twenty-one years who was said to be insane. The history as given to me by the physician, and the patient's mother stated that the patient was well till about ten days before, when he suddenly became nervous and depressed. He was constantly afraid of insanity; he was very restless and agitated, paced the room, cried much, slept little, and hardly took any food. The patient made the impression of an agitated depression, but the picture was so varied that I was at first uncertain as to the diagnosis. I soon found, however, that the symptoms as he enumerated them and his attitude and manner did not fit into any of the psychoses that I had in mind, but they readily corresponded to the horrifying description of the results of masturbation as given in quack literature. On being questioned he stated that he began to masturbate at the age of eleven, and continued on an average of four or five times a week until about two weeks before I saw him. At that time he suddenly discovered, through a friend who loaned him a book on the subject, that masturbation drives one crazy, etc., and soon thereafter he began to fear insanity, and felt all the symptoms enumerated in the book. Up to the time of the disturbance he was a bright student, and stood high in his classes and was absolutely well. After a few conversations, when I convinced him that masturbation cannot cause insanity, and showed him how he reproduced every symptom given in the quack book, he soon became himself. A similar case was that of a young woman of 21 years who suddenly became listless and irritable. She suffered from insomnia, lack of appetite, and was very hysterical besides. Questioning soon revealed that she had been masturbating since the age of fourteen about two, three times weekly. The masturbation was always evoked by erotic fancies. She became ill following a 'Talk to Girls' in which the horrors of self-abuse were portrayed by an elderly spinster. All of her acute symptoms disappeared as soon as the true facts were revealed to her.

"That masturbation does not interfere with physical health is well demonstrated when one examines masturbating children. E. Neter reported twenty-six masturbating children—eighteen girls and eight boys—all of whom were not above the age of six years; he found that neuropathic tendencies or heredity played no essential part, and that the chil-

dren themselves were in good physical condition. Their psychological behavior, however, showed much resemblance to the adult masturbator. Similar views were reported by Friedjung, and by C. W. Townsend, who reported the case of a masturbating infant eight months old. He says, 'The child was quite healthy.' Moll instituted inquiries about patients whom he saw as children because of masturbation; and after ten, fifteen, and twenty years he has been 'astonished to learn how well boys, who from the age of eight, nine or ten had masturbated for several years, had developed as youths and full-grown men.' I have had similar experiences in the case of girls. Of the many cases of masturbation that were reported to me by parents about their children, none showed any physical disturbance that I could discover which could in any way be attributed to masturbation. On the other hand, as soon as the parents or servants made them conscious of committing a crime, they reacted to it almost like adults. Like Moll I have kept myself informed about boys and girls who were seen by me because of masturbation over ten years ago. Every one of them has developed into a healthy individual, although some of them masturbated for years on and off without conflicts.

"Without citing more cases or authorities, I will repeat that I agree with those who hold that masturbation does not exert any harmful influence on the physical health of normal persons. Those dangers of masturbation which are mentioned by some authors—to-wit, that it might become a fixed habit or lead to excesses—I have found only in some psychopathic types. The average individual always passes over from the autoerotic stage to the love object, and then only rarely resorts to masturbation *faut de mieux.*

"However, to say that masturbation does no physical harm does not in any way imply that one may masturbate with impunity. While I do not consider masturbation an unnatural vice, but a natural manifestation of an impulse, I believe with Von Hug-Hellmuth that it should be controlled, especially if prematurely developed or frequently indulged in, otherwise it has a deleterious influence on the emotional or psychic characteristics of the individual. A child who masturbates much during the latency period (between 4 and 9), especially under conflicts, may injure his capacity to sublimate on higher aims, such as education. Also in adult life the conflict ensues sooner or later, and the person then develops certain characteristics. According to Sadger, chronic masturbators are socially timid, unkindly disposed, scrupulously truthful and devout; they show a tendency toward secretiveness, and entertain ideas of observation and persecution. Such characteristics, while not observed in many masturbators, do not tend toward personal happiness.

"Whether it is due to the fact that masturbation does not gratify the mastery impulse (Bemächtigungstrieb) as asserted by Federn, Reitler, Sachs, and others, and thus inhibits its development, chronic masturbators are not good mixers—they lack that active aggression which every male animal must possess to fit him for the competitions and struggles of life, especially in relation to the preservation of the species. I know a number of such individuals, some of whom are quite successful in their various

endeavors, who are very backward in their love life. They are usually too lazy to enter into competition of the love game, and prefer to remain old bachelors. It must, however, be remembered that such individuals are usually of a psychopathic make-up."

Brill is an unwilling witness of the evils of masturbation.

Havelock Ellis rejects the old traditional view, but frankly admits certain subtle evil effects:

"On the psychic side, no doubt, the most frequent and the most characteristic result of persistent and excessive masturbation is a morbid heightening of self-consciousness without any co-ordinated heightening of self-esteem. The man or woman who is kissed by a desirable and desired person of the opposite sex feels a satisfying sense of pride and elation, which must always be absent from the manifestations of auto-erotic activity. This must be so, even apart from the masturbator's consciousness of the general social attitude toward his practices and his dread of detection, for that may also exist as regards normal coitus without any corresponding psychic effects. The masturbator, if his practice is habitual, is thus compelled to cultivate an artificial consciousness of self-esteem, and may show a tendency to mental arrogance. Self-righteousness and religiosity constitute, as it were, a protection against the tendency to remorse. A morbid mental soil is, of course, required for the full development of these characteristics. The habitual male masturbator, it must be remembered, is often a shy and solitary person; individuals of this temperament are especially predisposed to excesses in all the manifestations of auto-erotism, while the yielding to such tendencies increases the reserve and the horror of society, at the same time producing a certain suspicion of others. In some extreme cases there is, no doubt, as Kraepelin believes, some decrease of psychic capacity, an inability to grasp and coordinate external impressions, weakness of memory, deadening of emotions, or else the general phenomena of increased irritability, leading on to neurasthenia.

"I find good reason to believe that in many cases the psychic influence of masturbation on women is different from its effect on men. As Spitzka observed, although it may sometimes render women self-reproachful and hesitant, it often seems to make them bold. Boys, as we have seen, early assimilate the tradition that self-abuse is 'unmanly' and injurious, but girls have seldom any corresponding tradition that it is 'unwomanly,' and thus, whether or not they are reticent on the matter, before the forum of their own conscience they are often less ashamed of it than men and less troubled by remorse.

"In either sex auto-erotic excesses during adolescence in young men and women of intelligence—whatever absence of gross injury there may be—still often produce a certain degree of psychic perversion and tend to foster false and high-strung ideals of life. Kraepelin refers to the frequency of exalted enthusiasms in masturbators, and I have already quoted Anstie's remarks on the connection between masturbation and premature false work in literature and art. It may be added that excess in masturbation has often occurred in men and women whose work in literature and

art cannot be described as premature and false. K. P. Moritz, in early adult life, gave himself up to excess in masturbation, and up to the age of thirty had no relations with women. Lenau is said—though the statement is sometimes denied—to have been a masturbator from early life, the habit profoundly affecting his life and work. Rousseau, in his *Confessions,* admirably describes how his own solitary, timid, and imaginative life found its chief sexual satisfaction in masturbation. Gogol, the great Russian novelist, masturbated to excess, and it has been suggested that the dreamy melancholy thus induced was a factor in his success as a novelist. Goethe, it has been asserted, at one time masturbated to excess; I am not certain on what authority the statement is made, probably on a passage in the seventh book of Dichtung und Wahrheit, in which, describing his student-life at Leipzig, and his loss of Aennchen owing to his neglect of her, he tells how he revenged that neglect on his own physical nature by foolish practices, from which he thinks he suffered for a considerable period. The great Scandinavian philosopher, Sören Kirkegaard, suffered severely, according to Rasmussen, from excessive masturbation. That, at the present day, eminence in art, literature, and other fields, may be combined with the excessive practice of masturbation is a fact of which I have unquestionable evidence."

Says Dr. Gottlieb Vogel: "The masturbator gradually loses his moral faculties; he acquires a dull, silly, listless, embarrassed, sad, effeminate exterior. He becomes indolent, averse to and incapable of all intellectual exertion; all presence of mind deserts him; he is discontented, troubled, restless when in company; he is taken by surprise, and even alarmed if required simply to reply to a child's question. His feeble soul succumbs to the lightest task. His memory and mind are weakened; fear and even despair overtake him."

The eminent author, Dr. James J. Walsh, aligns himself with the benign school. Thus he writes in Psychotherapy, pp. 482-489:

"A state of depression of mind similar to that which develops in patients frightened by seminal emissions is often seen in those who have for some time indulged in the habit of self-abuse. Rather frequently, a physician, especially if he is known to be interested in nervous diseases, has to listen to the story of a patient who is sure that his health is completely undermined and that his future is the darkest possible, because of this habit in younger days. Usually the patient is a young man who has been reading some of the literature of the advertising 'specialists' who distribute reading matter which pictures appalling and almost irretrievable effects from such sexual habits. The consequence is that the patient is in highly nervous condition, has lost his appetite, is not sleeping well, is avoiding society, because he fears that someone may recognize his condition and its cause, and he is really in a pitiable state. Such patients are usually sure that little can be done for them. Sometimes they have already been through the hands of several 'specialists,' particularly the mail-order variety, and the literature provided for them and the letters writtens to them have all helped to make them worse and much more solicitous about themselves.

"Unfortunately some of the exaggerated notions with regard to the effect of these habits that are so widely diffused by the exploiters of the young have been adopted by moralists with the idea that they can thus deter youth from certain practices and scare the victims of such habits out of them. It is extremely doubtful, however, whether self-abuse of itself, unless practiced in very early years or indulged in to a degree that is possible only in those of unbalanced mind, ever works anything like the serious harm that is claimed. Certainly physicians who are most familiar with its results are not ready to confirm the opinions usually advanced as to the awful harmfulness of the practice. Personally, I have a number of patients confess to me that they had indulged in the habit to some extent for twenty years and longer and yet had never suffered anything more than passing physical discomfort. It is unfortunate, then, that the exaggerations of the quack should by receiving the approval of the well-intentioned moralists, be emphasized so as to add to the neurotic disturbance of mind which makes these patients so miserable and for a time may seriously interfere with their health. Occasionally even suicides are reported in which the underlying motive seems to have been the dread on the part of a young man that a sexual habit has so undermined his health that cure is impossible and that physical and mental deterioration to a marked degree is inevitable. The opinions of conservative physicians tend to show that there is no good reason for thinking that in normal healthy persons such habits ever have the serious effects thus set forth.

"Patients can be assured that whatever evil effects follow the practice will not remain after it has been given up. There are no serious enduring sequelae, with one or two exceptions in very special cases, that perhaps should be noticed. Most men of considerable experience in the matter are now decidedly of the opinion that self-abuse does not produce any more serious consequences than the same amount of ordinary sexual intercourse. It is possible for sexual intercourse indulged in excessively, as it sometimes is in early marital life, to produce the same feelings of exhaustion, lack of control over the vasomotor system and disturbance of the gastro-intestinal tract which are noted in self-abuse. In both cases the symptoms promptly disappear upon proper regulation of life. This is a very different opinion from what used to be expressed in this matter and it is given only after due deliberation and consultation of many authorities both in writing and orally. Its expression, far from taking away one of the best deterrent motives against the practice, rather forces an appeal to the manliness of the individual. The motive of fear never accomplishes much, while a frank statement of the real condition may be greatly helpful.

"While the habit of self-abuse as indulged in by the ordinary individual practically never has the awful consequences that have been sometimes pictured as resulting from it long after its cessation, there is no doubt that it is productive of many physical symptoms during the time of its indulgence. There is almost sure to be a discouraging lassitude and a tendency to exhaustion after even comparatively small efforts. While this is true for ordinary muscular efforts it is also true for other bodily functions that involve muscular activity. In recent years we have learned that

of the stomach functions the motor is more important than the chemical. In the bowels the motor function is extremely important. There are likely to be disturbances, then, in the gastro-intestinal tract as a consequence of the muscular condition that develops in these patients. Probably more important even than the physical, however, are the psychic results of the habit. The patient feels discouraged and cast down at his inability to conquer himself and is likely to avoid such exercise and diversion of mind as would make normal healthy function possible.

"*Mental Disturbances.*—It is the custom to say that mental deterioration almost surely follows the habit. Those familiar with mental cases often see self-abuse practiced with serious results by young folks whose mentality is deteriorated. In these cases the practice was indulged in with great frequency and with direct physical consequences, such as loss of sleep, of appetite and the like. It is not the habit, however, that has caused the mental deterioration. The young patients are going crazy, but not because of self-abuse. Their habit of self-abuse had originated and become exaggerated because they were already mentally unbalanced. Their extreme indulgence in it is especially due to their lack of control over themselves, because they are not possessed of strong will power with regard to any thing. A vicious circle is formed and the insane young man gradually deepens his insanity by hurting his physical condition through over-indulgence in the habit, and all this further lessens his self-control; but were it not for the original mental weakness the habit would not have been indulged in to so great an extent.

"*Effect on Prostate.*—There is one phase of the ill effects of self-abuse that it is well to recall as having the confirmation of men of large experience and conservative views. There is a definite impression among specialists in genito-urinary diseases that enlargement of the prostate in some cases is due to the frequently repeated irritation and the prolongation of that irritation of the prostate during the practice of self-abuse. When such men as Bangs and Keyes are agreed on a subject of this kind, then even though in a certain number of cases the changes in the prostate leading to its enlargement are evidently inflammatory, it is well to consider that the functional over-activity of the gland superinduced by the practice may lead at least to an enlargement of the glandular elements with the consequent interference with urination which so frequently comes in old age.

"*Physical Factors.*—Besides mental elements that predispose to the formation of sexual habits there are physical factors that are important in these cases. They must be particularly looked for and treated carefully if found, or there can be little hope of relief for the conditions. The most prominent of these is the existence of a long foreskin, especially if its opening is small, thus leading to the retention of urine, the deposition of urinary salts with the formation of preputial concretions or so-called calculi. These are intensely irritant, cause frequent itching and thus predispose to these sexual habits. Even where the preputial opening is free and allows egress of urine without residue, the accumulation of smegma often causes considerable irritation and if the most scrupulous cleanliness with cleans-

ing at least once a day is not maintained, irritative conditions arise, especially in hot weather, that may give occasions for sex habits.

"Under these conditions the habit is sometimes seen in extremely early years. The youngest case I ever saw occurred in a child not quite nineteen months old, whose mother said that for several months she had noticed certain curious actions that she could scarcely understand until finally the truth dawned on her. Then she was morbidly sensitive about it, sure that the habit was due to a fault of her own and it was some time before she consulted a physician. This was her fourth child and, strange as it may seem, it was only at the conception of this child that she first knew what sexual pleasure was. She felt that her feeling had been in some way sinful and that as a consequence of her sin this curious habit had developed in such early years in her baby boy. As is usually the case in these instances, I found that the prepuce was very tight indeed, having scarcely more than a pinhole opening in it. During urination this ballooned and there remained in the pouch-like process at the end of the penis a certain amount of residual urine after every urination. From this urinary salts had been precipitated and had formed scaly concretions which remained in the preputial pouch and were extremely irritant. As a consequence of this irritation the baby had been very itchy and it was in the endeavor to relieve the itching by the natural process of scratching that the pleasure of the sensations aroused had been discovered and the sexual habit had been formed.

"Not infrequently in young men a condition resembling this to some degree at least is found and then, of course, the question of its removal must be taken up at once. It is surprising how often in youths in their late teens concretions are seen. The constant irritation makes it practically impossible for the patient to keep his hands from these parts, and so circumcision is absolutely necessary. Not infrequently when the preputial condition is not nearly so bad this operation may also be at least advisable if not necessary. The matter of cleanliness must be attended to, preferably after getting up in the morning and not before going to bed at night, for the reaction after cold water may cause congestion of the organ. After a time the frequent use of cold water seems to make the parts much less reactive to irritation of any kind.

"*Physical Effects*—The super-excitation of nerves consequent upon the more or less general erethism that is induced, lessens resistive vitality. Victims of the habit are more liable to colds, to various infectious diseases, and are subject to fatigue and lassitude, with incapacity to work to their full power. They lose control over their vasomotor system to some extent as a result of this systematic erethism. They blush easily, they perspire easily, there is a tendency in many of them to flash as if of heat and cold, they become pale under excitement or anger more than formerly, they are likely to suffer from cold hands and feet, and the surface of the body is inclined to be cold and as a consequence patients are tremulous. This represents a waste of nervous energy and as a consequence sleep may be disturbed and indigestion interfered with.

"It is important, therefore, to consider these cases as really needing medical care. For their treatment the most important consideration is prophylaxis, not alone of the habit itself, but of each of the acts. Prophylaxis of the habit is an ethical question that we can scarcely do justice to here. Prophylaxis of the acts requires consideration of the physical and moral factors that predispose to their commission. While the habit may have secured such deep control that the patient almost despairs of relief from it, when care is taken to remove physical and moral predisposition the conquest of the habit becomes comparatively easy. Over and over again I have seen cases that have lasted for years in which the patients were surprised at the ease with which they were able to drop the habit just as soon as they took the measures necessary to prevent predisposing conditions.

"*Breaking the Habit.*—Once physical factors predisposing to it are removed, the habit is not so hard to break as it would seem to be from the suggestions to that effect made in sensational literature. It is neither so deleterious in its physical effects nor so deteriorating as regards character as is usually stated. Anyone with a reasonable amount of firmness can break it off if he really resolves to. Over and over again I have seen patients quite surprised at the ease with which they were able to avoid the practice for weeks once they made up their minds in the matter. Indeed this is one of the unfortunate features in completely conquering the habit. It is comparatively so easy to break it off when the mind is made up that there comes the feeling that now it must be absolutely facile to keep away from it. This is, however, never true. Relapses are extremely easy. If the patient allows himself to read vicious books, or suggestive literature of any kind, or permits himself an indulgence in the reading of several columns of the account of a sex murder trial, or goes to see a sex problem play with its suggestions, or exposes himself to sexually exciting conditions of any kind, he will be almost sure to lapse into the old habit.

"Relapses are almost inevitable. But it is easier to break the habit the second time than it was the first and it becomes increasingly easy if the patient keeps up the effort of regulating his life so as to avoid the occasion of the habit. Relapses are quite as sure to occur as with regard to alcoholism if occasions for the taking of liquor are not sedulously avoided. The patient always seems to need a confidant—someone to whom he can go for help and who assures him of the ability that he has to overcome himself if he only will. The practice of confession in the Roman Catholic Church makes it comparatively easy for serious people of that faith to overcome the habit. The physician must be taken into confidence in the same way and for a time, at least once a week, the patient may have to be perfectly frank with regard to his condition in order to have the help afforded by such confidences. The physician can often, particularly at the beginning, make the physical conditions such as to help in the breaking of the habit. Bromides taken to the extent of a dram or more a day are almost a specific for superirritability of the nervous system, and if taken for two or three weeks the patient will usually have little or no difficulty in overcoming the habit. They are not of much avail after this time un-

less the patient's character has been aroused to determined helpfulness in the matter.

"In obstinate cases it may be necessary to have a patient come every day, or at least every second day, for some time and give an account of how he has succeeded in resisting his habit in the interval. At least he must be asked to report whenever there is a lapse. It is surprising how much the anticipation of having to tell someone else of a drop back into the habit means in helping the patient eventually to overcome it. Very slight motives serve to cause lapses, but almost any external personal aid, if pursued with confidence, will avail effectually to break it. I talk from experience of many cases and know how much can be accomplished even though patients insist that they have tried all the resources of their will power and of prayer without avail. They have really not tried, they have not willed in reality; sometimes they have reached a point where they cannot will without the moral support of another personality. This can be readily supplied to them by a firm, sympathetic physician whom they respect. It will take time to overcome the tendency to relapse whenever the will is relapsed, but the habit itself can be broken without much difficulty in a few days.

"Certain times are particularly dangerous for relapses into the habit. These are just before going to sleep at night and before getting out of bed in the morning. At these times the mind must be occupied or else the patient will almost surely find his habit recurring. Often the habit of reading in bed, properly supported by pillows and with abundant light at an angle that makes reading easy, seems to be good for these patients, because they may read until their eyelids get heavy, then pull the chain of their light to extinguish it and turn over to sleep. In the morning prompt rising after waking is important. Bed clothes that are too heavy and too great warmth of clothing predispose to sexual excitation and must be avoided. The room should be cool rather than warm and the mattress rather hard.

"The more tired the patient is the less liability will there be to difficulty in these matters. But air is even more important than exercise in giving the tiredness which superinduces deep sleep. A lessening of the normal amount of oxygen seems to relax the inhibitory power of the higher centers over the sexual centers of the cord. People who are drowned, those who are hanged, and those whose supply of oxigen is shut off by the inhalation of the heavier gases are likely to have involuntary seminal emissions. These are probably consequent upon the shutting off of the air.

"The important element of the treatment is to make the patient feel, that if he really wants to, he can conquer in this matter. The old motives of fear, and especially fear of physical consequences, were quite unworthy, and inasmuch as they had any effect rather produced a deterioration of character than a strengthening of it. The patient must understand that if he is a man he can overcome it. Religious motives will help much. I do not know that I have ever seen a case where religious motives were not the most important element in the cure, but this may be due to the conditions in which I have been placed. I have seen a number of these cases

in men and women because clergymen have sent them to me in order that they might be helped in the work of reform, and while there are many relapses and some had apparently given up the effort in despair of their power to overcome themselves, nine out of every ten of those who have seriously faced the problem have succeeded in overcoming themselves, and as a result have a better knowledge of their own characters and more respect for themselves. They are better men in every way than if their improvement had come about through selfish fear of physical consequences.'

"*After Cure.*—After the habit of self-abuse has been conquered the seminal vesicles will have a tendency to evacuate themselves rather more frequently than before and as a consequence they will nag at certain sexual nerve endings. They are used to having their contents emptied and distention is followed by rather ready evacuation. During the course of this evacuation sexual thoughts are awakened in dreams and this may lead to dream states in which there seem to be lapses into the old habit. This constitutes a serious difficulty in getting rid of the habit entirely by young and vigorous men. They may even become disheartened by it. It should be explained to them that they must let contrary habits form gradually and permit nature to accommodate herself to the new state of affairs. The bromides are a useful adjunct for body and mind.

"*Supposed After-effects.*—At times a patient suffering from some exhausting or serious disease, consumption, heart disease or the various forms of Bright's disease, will be discouraged by remembrance of the fact that in earlier years he allowed himself for some time to fall into the habit of self-abuse. If he has read, and very few men have not, some of the literature issued by the advertising 'specialists' and has heard the unfortunately exaggerated ideas commonly entertained with regard to the influence of health of this habit, he will become more or less disheartened by the idea that he thus undermined his constitution and that one reason why he is not able to react better against his affection is that he seriously diminished his resistive vitality. This idea must, of course, be overcome or it will act as a constant source of unfavorable suggestion, lessening appetite, tending to disturb sleep, banishing peace of mind to some extent and thus inhibiting the patient from releasing such stores of vital energy for his recovery as would surely be in his power under favorable conditions.

"*Female Habits.*—The habit is more rare in women than in men, but when it occurs is a little harder to break. In men it usually develops in youth, but oftenest in women who are past thirty-five and unmarried. In these cases it is much harder for the patient to regain self-control, because the class of women patients who acquire such a habit have less character, as a rule, than the men who fall into the same condition. In all sex matters, once passion is aroused or habit formed, the woman is likely to lose control of herself more than is the man. Even in women, however, it is not only possible, but under favorable circumstances, quite easy to secure a break in the habit, though relapses are more frequent than in men. Certain occupations seem particularly to favor the development of the habit. These are mainly sedentary occupations that can be followed without the necessity for such attention as to prevent the mind from wander-

ing off into thoughts that may prove provocative of sexual sensation. Dressmakers seem particularly likely to suffer from the affection, and those who run sewing-machines are predisposed by the movements involved in their occupation to the development or, at least, to the persistence of the habit.

"For women even more than men religion and the motives it supplies are the most efficient factors for the ultimate cure of the habit. In general, the greater difficulty of overcoming it in them is due in no small degree to the fact that they live indoors much more than men, often have sedentary occupations and are more frequently alone. These afford opportunities for introspection and for the harboring of thoughts that lead to relapses into the habit. Besides, women are more prone to read novels and stories relating to sex problems and the details of sex murder trials and the like which constitute ever-recurring sources of mental erethism. If their habits can be modified, especially if they can be made to realize the necessity of being out in the air as much as possible and for keeping their windows open at night, as well as for thorough cleanliness—for every gynecologist notes the necessity of this and how frequently it happens that neglect of it leads to irritability of the external organs that is of itself a serious factor —then it would be no more difficult for women to overcome the habit and get beyond the relapse than it is for men. Sometimes we have to overcome a morbid dread of touching themselves, even for cleansing purposes, which allows the accumulation of irritant material and predisposes to relapse."

"Fear may hold a man back for a while; but, at the same time, if it is not reduced merely to an auxiliary force in the battle, it will bring about a degeneration, a weakness, a relaxation which will soon sap the strongest energies. Religion erects chastity into a virtue, instead of dragging it down to a hygienic precaution; religion lifts up above the danger rather than simply guarding against it. The morality inculcated by the Church imbues the mind and the heart with the horror of sin, whereas lay morality can but strike and impress the preservation instinct with a tragic frame of chastisements."—F. Veuillot in *L'Univers.*

Touching the self-abuse of women the sure teaching of theologians is that it is a mortal sin. The malice of it consists not in the fact that the secretions of the glands are wilfully ejaculated outside of lawful coitus, but in the fact that venereal pleasure is unnaturally procured, thereby deranging the order of nature. Bucceroni (Inst. Theol. Moral., Vol. I. 813) endeavors to prove that feminine masturbation with orgasm be specifically diverse from complete venereal self-excitation. Of course, if his view were held, the circumstance of the emission of the secretions of the glands should be stated in confession. Noldin rightly rejects Bucceroni's opinion. (Noldin, Theol. Moral. I, Appendix De Sexto Praecepto, Art. II, 30 seqq.) The reason is clear. That humor in women is ordained by nature for the copula, but not as a necessary constituent. Bucceroni's declaration that feminine masturbation have a direct effect on ovulation is incorrect. Wherefore a female penitent confessing the sin of *masturbation is never to be interrogated touching its circumstances.*

A wife may desire her lawful coitus with her husband and in his absence look forward with joyful anticipation to such conjugal act because it is a complacency in the contemplation of a lawful act. But neither the husband nor the wife may voluntarily bring on orgasm by such contemplation because no voluntary orgasm is lawful outside of actual lawful coitus. The theologians who allow the woman to complete her orgasm after the orgasm of the husband consider her act as the complement of the conjugal act, which in her was not complete.

It is a very ignorant or unfeeling husband who drives the wife to such unaesthetic and humiliating act. If he continue his embrace with tender caresses the woman will reach her orgasm in a blissful act of love.

On Sept. 2, 1904, the Sacred Penitentiary gave answer to the three following questions:

"Tibullus hears the confessions of women whose husbands are absent, and who find continency difficult: he teaches and advises these women that they sin not in the following cases:

"1. If through desire of the absent husband they move themselves to orgasm.

"2. If they desire to experience this orgasm through ardent desire of the husband.

"3. If they by touch excite themselves to orgasm, provided they refer the exciting cause to the absent husband."

The Sacred Penitentiary answered:

"These acts are gravely illicit, and the confessor approving them is to be denounced."

From a calm survey of the evidence we come to the conclusion that masturbation is always physically and psychically harmful, although in varying degrees, depending on many circumstances.

Imposters and quacks have exaggerated its effects.

Masturbation may be practiced to such a degree that it shall cause every evil enumerated in the foregoing lists.

There is always a danger of such excess. The facility with which the act may be practiced invites to excess.

The psychic evil is often present when no physical evil may be observed. There is a subtle, elusive deterioration of the finer spiritual qualities. We may not detect a loss of memory or a diminution of physical strength, but there is a deep wound in the soul. The masturbator is not a normal man. He is full of self-reproach, shame, fear. The brand of Belial is upon him. The consciousness of his nastiness penetrates his soul and unmans him.

He has outraged his manhood, he is dishonorable. He lacks mental concentration, especially in prayer. Spiritual torpor, ennui, desolation invade his soul. His guilty conscience moves him to fear detection. Moreover he often falls a prey to the quacks who exploit his diseased imagination.

I narrate the following true history of a case professionally known to me.

N declared that he experienced voluptuous feelings at his sixth year. He indulged it by masturbation and by cruelty to animals.

His sex complex was also masochistic. He took great delight in imagining himself whipped. He often disobeyed at school in the hope that the female teacher would whip him.

He came to puberty at the age of thirteen. At that time he was a confirmed masturbator and sodomite. He masturbated daily, often several times in the twenty-four hours. The psychic stimulus of imagination was always present. He became weakened in body and mind. He found great difficulty in meeting persons and in expressing his thoughts. His awkwardness and imbecility removed him from the society of girls. He lost all decent human sentiments. He sought occasions to gaze at the nude body of his ignorant mother; and, listened at the rude door of his parents' bedchamber. He lived in continuous fear of God's chastisement. His muscles were flabby, his gaze was stupid. He was shunned by his companions, save those who abused his body.

He finally reached the point of temporary impotency. His semen flowed in excessive nocturnal emissions, and through the least excitement in his waking state. There was no erection, the scrotum was flaccid. The slightest motion—swinging, bicycling, equitation, riding in a wagon or railroad coach—produced a dreaded unpleasant flow of semen.

At this point he resolved to turn away from the habit. This was not difficult. He had drifted away from his companions in sin; and moreover, he had but feeble sexual passion.

And now comes the saddest chapter of the history. He was persuaded by the literature that he read that all seminal emissions were pathologic.

My client declared to me that his torture of soul during the years of his adolescence had been fearful.

There was always deep in the mind the consciousness of his degradation before God and nature. He was disinclined to meet men: he felt a sense of loneliness and ennui. In all athletic sports he was backward: he recognized with dreadful regret what he had lost by his unnatural sin. The state of the masturbator may be summed up in the one declaration: he is unnatural.

It is evident that masturbation in childhood and adolescence is more harmful than adult masturbation.

Confessors should never represent to adult masturbators the physical evils of their acts: such effects may not be present.

N devoured every advertisement of this nature and began to take the vile, worthless medicines. His seminal emissions were a tragedy. Nevertheless by the complete cessation of the habit the recuperative powers of nature asserted themselves: he grew stronger. He was now convinced that if he could suppress the seminal emissions he might recover. He was most secret touching his state. He sat up in a chair to sleep, thinking thereby to avoid the dreaded "night loss", as he had been taught to consider these physiological processes.

Failing in all his endeavors he sought help from physicians. Here he was unfortunate. They deceived him, and took his money.

He had heard of an eminent physician, who lived in a distant city. He visited him. The good man told him the truth; made known to him the true facts of physiology, and assured him that a virtuous life would restore him.

But the deluded youth would not believe the physician.

The youth was now seventeen years of age.

He continued to visit quacks until he suffered a nervous collapse. In the hospital he was fortunate to receive the ministrations of a learned priest who finally drew him out of the "slough of despond."

Long mental habit made him always dread the physiological seminal emissions, and an acquired bashfulness went with him through life. His recovery, however, proves the truth of Dr. Walsh's statement.

While most idiots if not restrained are masturbators, the idiocy is in most cases the cause of the self-abuse, and not its effect.

Concentration of the mind on erotic phantasms, especially in the earlier years of life, greatly weakens and injures the faculty of mental concentration.

From professional experience the author is persuaded that among Catholic children masturbation is far more prevalent in boys than in girls; that, as a rule, it occurs at an earlier age in boys; and that among boys the abuse is practiced more frequently, and is consequently more injurious; although the abuse of the more complex female sexual apparatus may cause greater specific maladies in girls.

"Prophylaxis or prevention of masturbation in preadolescent years requires several steps:

"First, avoid irritation of the genital nerve-endings. This means cleanliness for all children, circumcision for twenty to thirty per cent. of boys who are born with tight prepuce or foreskin, similar surgical treatment for some girls whose abnormal structure tends to irritation, and loose and properly fitting clothing for both girls and boys.

"The second rule for preventing self-stimulation by children demands guarding against opportunity. Privacy is dangerous for all children. Intimate relations between two children should be kept under the observation of older people as far as possible. The best type of school buildings do not have strictly private closets. Sending children to bed for punishment or allowing them to lie in bed when they are wide awake are common but harmful errors of parents.

"A third line of prevention is general hygienic care, such as regular sleeping hours, cool bedrooms, light covers, prompt treatment of constipation, and plenty of outdoor exercise. All of these are factors in reducing the tendency towards irritation, which may lead to stimulation.

"A fourth line of prevention is early information as to the general meaning of the sex organs. Curiosity can not be stifled for many years, for under present-day conditions children can easily satisfy their natural curiosity by asking other children. Many times the style of information thus obtained incites to self-exploration, and thus there is a possibility of developing a more or less fixed habit of self-stimulation.

"A fifth line of prevention is in simply warning, when occasion demands, against handling of the organs except for sanitary purposes. In giving such warning parents should be careful to speak as calmly as they would concerning any other things that rules of health prohibit. In general, it is best to say 'do not' in early childhood until several years later there may be added the information that 'doctors say it is best' not to do the things we wish to guard children against. This is the general line of the best methods of giving any elementary hygienic information.

"The above paragraphs outline five lines of attack on prevention of self-stimulation, chiefly with reference to the childhood years. In part, this will apply to the pubertal years when the fully awakened sexual instinct sets up a new source of temptation, and especially to boys. Probably this can be met only through sex-education, which aims to set up ideals and motives for sexual conduct. This will be considered in the last chapter of this book.

"It is probable that masturbation begun in adolescent years does less harm than when the habit is formed in childhood. Especially is there less possibility of interfering with the normal development of the reproductive organs. On the other hand, many psychologists believe that the habit occurring in adolescence is more likely to lead to moral and social and psychical maladjustments. Beyond doubt, there are many such results, but on the whole the vast majority of young people concerned do not show any external signs of suffering nor any permanent damage in health or character. Hence, we must avoid exaggerated emphasis when guiding young people.

"As to the prevalence of masturbation as a habit, there is no accurate scientific knowledge; but accumulated testimony from many sources seems to suggest that twenty to thirty per cent. of girls and seventy-five to ninety per cent. of boys have more or less experience with self-stimulation in preadolescence or early adolescence. However, it is absolutely certain that a very high percentage of young people who recall such experiences in childhood or early youth did not form a definite habit." (Maurice A. Bigelow, Ph. D.)

It is a pernicious error to conclude that the extreme evils which *may* result from self-abuse, be present in every case. Thus a confessor will weaken his counsel by representing the dreadful physical results of self-abuse to a penitent who by personal experience feels little or none of these. The penitent may have begun the habit in maturer years, when nature is better able to stand the strain. He may be moderate in the abuse, and may be of such a robust temperament that the drain of his vitality is recuperated. Every masturbator suffers some loss of vitality and of mental acumen, but the loss may escape his observation. The blunting of his moral powers, the coarsening and bestializing of his sentiments; the perversion of his whole spiritual nature; the spiritual aridity and torpor thence arising; and the lowering of his moral standards will escape his observation.

Masturbation exerts its deadliest reaction upon the *anthropos pneumatikos,* the spiritual man. It is an insult to the dignity of man, an in-

sult to the Creator. It perverts the high powers of the soul, and drags it down to a selfish filthy plane. The dishonor of the act haunts the man, and causes a deep mysterious sense of shame. If the shameful act becomes a habit, it focuses the mind on filth. The noble ideals, noble impulses, noble principles are submerged and obliterated in a cesspool of nastiness. The man is ashamed before himself, ashamed before his fellow man, ashamed before God. I have heard penitents declare that they were unhappy when alone in a church from a sense of shame in the presence of God.

Sexual self-abuse may also develop sexual perversion. Sexual perverts find little gratification in natural sex indulgence. They tend to that which is unnatural and cruel: fearful mutilations and murders are often wrought by them.

The older theologians associate with seminal emissions a phenomenon which they call *distillatio.*

This is erroneous. The humor of *distillatio* is an urethral excretion excreted by the prostate gland and by the mucous follicles of the urethra. It contains no spermatozoa, and its flow is in no wise sinful. Of course its flow may be promoted by venereal excitement, but in such case it is the venereal excitement which, if unlawful, is sinful: the *distillation* is indifferent.

It is true that in extreme old age the spermatozoa are absent from the semen, but this senile semen can not be likened to the *distillation,* for the reason that the semen is produced by the organs of reproduction, and its emission is intimately connected with the psychology of the man.

To judge the evils of masturbation solely by its effect upon the bodily powers of man, is to take a one-sided view of the nature of man. He is not a mere breeding animal. August Compte stigmatized as veterinarians those physicians who judge the effects of human acts from their reaction on the animal man, abstracting from their psychic reactions.

In dealing with causes adverse to his well-being we must consider the whole nature of man. Grouping all the unnatural sexual sins under the common heading, masturbation, we declare that these have a most pernicious effect upon the spiritual nature of man. The deep sense of shame that man feels after the commission of one of these sins; his dread of detection, his shifting shame-faced gaze, are nature's proclamation against her violator. An awkwardness in speech, gaze, and muscular action characterizes the victim of masturbation. He is not proficient in manly sports; he is cowardly and forgetful. He is not popular with his fellows, unless it be with degenerates like himself. His hands are clammy, eyes pale and dead, and his sweat foul-smelling.

His muscles become flabby, he becomes hollow chested and stoop-shouldered. There is no crispness or resiliency to his mind or body. He moves with a sluggish, dull movement, sinks into frequent reveries, and is lazy and morbid.

These effects will follow in different degrees, according to the degree of the abuse of nature. Self-abuse in the earlier years of life causes the

greatest physical derangement: the spiritual ruin attends on the vice at all stages of life.

Great care must be exercised to save the victims of self-abuse from patent-medicine frauds and dishonest physicians. Some years ago the newspapers extensively advertised medicines to restore "Lost Manhood", "Night Losses", "Impotency", etc. "Specialists" also advertised to heal "Seminal Emissions".

The youth who had impaired his vitality by unnatural practices was already melancholic and depressed. He fancied that he was the most wretched of men; that he alone had fallen, or at most that he belonged to a small class of wretched mortals. The advertising matter that these ghouls sent him convinced him that every evacuation of the seminal fluid was a terrible drain on his vitality, endangering his body and his mind. They painted a lurid picture of his symptoms. In his weakened state he fancied that every symptom was verified in his case. The poor dupe fell an easy prey.

The first thing to impress on the sufferer's mind is the fact that no medicine can be effective, and that no medicine is needed. There may be an extreme case where a tonic may be employed, but this should be given by a reputable physician. In few cases will a tonic be necessary. Suppression of the abuse and a proper mode of life will restore all that can be restored. Nature's recuperative powers are very strong in this matter. As the production of semen is one of the most important processes of life nature has been generous in supplying the necessary element, and in repairing the waste. Touching the abundance of the procreative principle Dr. Malchow (Sexual Life pp. 192-193) writes thus:

"Nature has been very lavish in supplying the seed for propagation, for only an inconceivably small part of it finds conditions favorable for its growth.

"The number of spermatozoa in a seminal emission varies somewhat with the frequency of ejaculation, but each emission contains millions, though only one is necessary for fructification.

"The number found in an ordinary emission of about two drachms of seminal fluid is variously given from 30 to 500 millions, depending somewhat upon the time that has elapsed since the previous ejaculation. (Sturgis) The amount and consistency of the seminal fluid is influenced, among other things, by the prostatic secretion.

"The Graafian follicles in the human female ovary, from whence come the ova that are impregnated upon conception, are also very numerous, and Foulis estimates that at birth each human ovary contains not less than 30,000.

"The ovum in the female is developed, matured and discharged, whether copulation takes place or not, and as only an occasional one of that vast number is impregnated by the male element, which is many times more numerous, it is obvious that nature has supplied a practically unlimited amount of fructifying material and guarded against all possible loss; and so it becomes apparent that a saving or sparing use of the vital

principle is wholly uncalled for and no fear of exhausting the supply need be entertained.

"On the contrary, it is highly probable that only a portion of the inherent amount is ever elaborated and discharged, and, other things being equal, the more that is produced, the greater the capacity for production."

I have had penitents who habitually manipulated their sexual organs in sleep, thereby producing orgasm. In one case a neurosis was produced necessitating hospital treatment. He never recovered: dementia praecox slowly set in.

In all other cases by the help of religion complete self-control and continency were effected.

Masturbation enfeebles the moral courage of its victims: therefore the first step must be encouragement and assurance of a complete cure. Without the aid of religion nothing can be accomplished.

The sufferer must therefore be persuaded that the semen is an abundant secretion, and that every normal man after the age of puberty may be relieved of the accumulated surplus. We quote the following from Dr. Malchow (Sexual Life, pp. 87, 88):

"The secretion of semen in the male, like ovulation in the female, is the natural or physiological process of adolescence and manhood, while its spontaneous excretion is evidence of the activity of the sex glands, and should—if we assume that the deprivation of sexual intercourse (which is nature's method of depletion) is at times natural and desirable—be considered as normal and physiological within certain limits.

"These limits permit of great variation and depend largely upon the age, thoughts, associations, habits and actions of the individual.

"The sexual glands are susceptible to the same influences as the mammary, lachrymal, salivary and other secretory glands of the body, and their activity depends upon their blood supply, or stimulation.

"Seminal emissions, except those occasioned by natural intercourse, are disgusting, and hence the cause of shame, and so knowledge of their occurrence is carefully guarded and kept secret.

"The period of adolescence, or the decade between the ages of about 15 and 25 years, is a time of great bodily activity, with immature judgment and mentality, and as the majority of young men of today remain unmarried for the greater part of that time at least, they periodically experience a spontaneous evacuation of seminal fluid—if they live in strict chastity—which phenomenon is popularly designated as a 'wet dream.'

"Many people with little common sense and less knowledge are prone to intimate that these discharges are abnormal and indicate a weakness or diseased condition, but if this were true then, indeed, would it be extremely difficult to find a healthy man.

"With the view of demonstrating the existence of a sexual periodicity in the male, F. H. Perry-Coste, a recognized scientist, conducted a series of observations extending over a period of 13 years and found that spontaneous discharges occurred on an average of 37 times during a year.

"These observations were made upon himself between the ages of 20 and 33 years and there seems to be no reason to doubt their accuracy, and so they might serve to form a fair criterion by which to judge at this age.

"Owing to the many and varied influences which naturally tend to sexual excitement, this frequency might be given a considerable range of variation without giving rise to any marked degree of abnormality."

Hygienic measures are useful adjuncts, but the supernatural motives must take the lead. Against the cowardly penitent's avowal, that he can not resist, allege the inspired words of St. Paul:

"No temptation hath taken you but such as man can bear: but God is faithful, who will not suffer you to be tempted above that ye are able; but will with the temptation make also the way of escape, that you may be able to endure it." (I. Cor. X, 13.)

Some authors recommend marriage as a means of reform of masturbation. This seems a false principle.

A man who has debased himself to such an extent that he will not subdue his animal passions within the limits of the law of nature is not fit to be the spouse of any decent woman. It is a degradation of the Holy Sacrament of Marriage to make it a drudge of his coarse lust. Many of these wretches practice masturbation in the married state. They are incapable of the continency demanded by certain seasons in the married state. Mere carnal lust is the motivation of their conjugal life. They are cruel and excessive in their demands.

Finally from a physiological viewpoint marriage is not to be counseled. The abused sexual apparatus should regain its vigor by rest and reorganization of its whole physical and psychic being before entering into a state in which its exercise will retard the recuperation of its overtaxed powers.

The eminent theologian Bouvier recommends marriage. We quote his opinion, not for the part which concerns marriage, but for another important point.

"Aliquando suadendum est matrimonium, iis qui nubere possunt, tanquam unicum, aut saltem tanquam efficacius remedium. Ubi vero agitur de juvenibus qui statum perpetuae continentiae amplexuri sunt, cum maxima cautione procedendum est. Qui tali vitio inquinati sunt et in pollutione saepe labuntur, communiter temere et imprudenter castitatem voverent: a professione religiosa igitur, et multo magis a statu clericali repelli debent, nisi extraordinaria dent signa conversionis et longa experientia, nempe per plures annos, firmitatem propositi demonstrent ac pignus perseverantiae exhibeant."

The counsel touching marriage seems unwise, but the principle laid down touching the religious calling is prudent.

There is a vast difference between the youth who in a moment of extreme passion may place an unchaste act and the habitual masturbator. "In multis offendimus omnes." The non-habitual sinner, if truly repentant and rightly resolved, is not to be debarred from the religious life.

I speak of those who enter a religious order and of priests.

The habitual masturbator should not be admitted to the ecclesiastical seminary or to the religious order unless he fulfills the following conditions:

1. His general character should be pious, serious, studious, upright and firm.
2. He should exhibit extraordinary evidence of repentance.
3. He should give proof of a complete mastery of the habit during at least a year before his entrance.

If the habit returns in the seminary he should be dismissed. An isolated fall followed by great repentance should not be classed as a return to the habit.

A person who develops the habit in the seminary should be dismissed at once.

Sad examples are attested of seminarists who returned to the infamous vice after ordination. The presumption is against any such candidate. This presumption should only yield to solid proof of the extirpation of the habit.

Vicious early habits may have so corrupted a man's mind that erotic dreams may too frequently produce a seminal emission. In such cases development of self-control is the great means of recovery. If the unlawful phantasms are repulsed, and the excitement of the genital organs repressed so that a habit be formed, the patient will soon find that his conscious self-control projects its power into the unconscious period of sleep. He will find that even in his dreams he combats the erotic phantasm. Thus he will gradually restore nature to a healthy normal basis. A temperate life must accompany the act of the will. The cleaner the conscious thoughts are, the less frequent will be erotic dreams.

The celebrated Dr. Debreyne, who was at the same time Trappist Priest and Doctor of Medicine of the Faculty of Paris, declares that he has observed young men, whom excessive nocturnal emissions had brought almost to the verge of the tomb, regain full vigor of body and mind by means of a vigorous self-control which he counseled them. Medicine is rarely of any worth, and is often pernicious. (Moechialogie, p. 31)

The reconstruction of the mind upon an honorable basis and the proper hygiene are the means which nature demands.

Proper care should be given to keep eroticism out of the mind; stimulants and intoxicants should be avoided, and both body and mind should be healthfully exercised.

"Otia si tolles, periere Cupidinis arcus." (Horace)

It is imperative also to encourage the sufferer. Despondency and pusillanimity are the usual results of the impairment of the vitality which self-abuse causes.

The emissions may be excessive at first, but with the cessation of the abuse, the reform of the sex-thoughts, and a proper mode of life nature will rapidly return to normal conditions. All patent medicines are useless or harmful. Nature does not need them. Those physicians who play on the credulity of these misguided sufferers are ghouls in human form. It is a sad truth that the name of such physicians is legion.

The chief difficulty of the sufferer lies in the imagination. He has the consciousness of his sin in his soul, and he believes himself unlike the rest of men. He will be more reticent on sexual matters than a continent man, as he fears the divulging of his secret. He is liable to suffer nosophobia, or excessive dread of disease. He loves to devour descriptions of lost manhood. He will eagerly catch at any medical writing that seems to bear on his case. But the greatest suffering of all is the seminal emission, which he ignorantly believes to be pathological.

In this state of mind the sufferer may yield to the advice of evil counselors and seek relief in unlawful intercourse with women. Of course, if this intercourse be sufficiently frequent to relieve the engorged seminal vesicles, it will obviate, in some degree, the involuntary emissions, and it might act favorably on the imagination, but it can not be conscientiously advised. In the first place it is intrinsically evil and therefore can never be made a means to an end. The man would be obliged to seek his sexual gratification among prostitutes, and would be exposed to venereal diseases, which usually infect this class. Moreover, to resort to this means is entirely unnecessary, and results from ignorance of nature's laws. The man must be convinced that seminal emissions in celibate adult men are "the way of all men." Nature demands the elimination of the abuse and favorable conditions in which to recuperate.

It seems therefore unwise to counsel marriage as a preventative of the evils of self-abuse.

In the first place, if the sufferer has exhausted his vitality by the abuse, he should give nature time to recuperate before exercising the sexual functions of marriage. He owes it to himself and to his spouse to restore himself to the state of a man before entering the holy state of matrimony. The self-control thus made necessary will assist him afterward to practice that temperance and self-control in marriage necessary to make his union to be according to the Christian ideal. It sets too low an estimate on the holy state of marriage to offer its sacred functions as a remedy to a man still under the control of the brutal vice of masturbation. There is danger that such a man may care nought for the sublime spiritual purposes of marriage, but contemplate it only as an animal is led by instinct to the copulative act. Such a man will be liable to abuse the rights of marriage as he has abused his sexual powers by solitary vice.

"For this is the will of God, your sanctification; that each one of you know how to possess himself of his own vessel in sanctification and honor, not in the passion of lust, even as the Gentiles who know not God." (I. Thess. IV. 3, 4)

"Vessel" here means the man's own body.

For the convenience of treatment we may group under the generic head of masturbation every voluntary emission of the seed outside of sexual intercourse, and of this we say that it is forbidden by God because it is intrinsically evil. Hence Pope Innocent X condemned the following principle of Caramuel: *"Mollities jure naturae prohibita non est; unde si Deus eam non interdixisset, saepe esset bona, et aliquando obligatoria sub mortali."*

The sin of Onan is thus described in Genesis, XXXVIII. 9, 10: "And Onan knew that the seed should not be his; and it came to pass, when he went in unto his brother's wife, that he spilled it on the ground, lest he should give seed unto his brother. And the thing which he did was evil in the sight of the Lord; and he slew him also."

Two evils are embodied in Onan's deed. He sinned against justice and against the direct law of God touching the right of the first-born; and he sinned against nature by the *coitus interruptus*. For the purpose of condemning the evil deed in all its parts the Holy Text has circumstantially described it. The greater evil was the sin against nature. The cause that led up to this great evil is only related to show a motive for the fearful deed. Dare any man say that God would have regarded Onan's act as less reprehensible if Onan were actuated by any of the motives which cause our modern Onanism? Is it not the obvious sense of the Holy Text that Onan was so opposed to the yielding of the primogeniture to his brother that he shrank not from the fearful abomination, which so polluted the land that God removed the monster? The law of the Levirate was not absolute in Israel. A man might avoid the obligation by a slight penalty. (Deut. XXV. 10)

Therefore, if the specific malice of Onan's deed lay not in the *coitus interruptus,* the penalty would have been too severe.

As we have before mentioned the specific malice of all sexual sins against nature may be reduced to one general principle, viz., The voluntary effusion of human seed against the law of nature, or the voluntary procuring of unlawful venereal pleasure outside of coitus. Hence Masturbation proper, Sodomy, Onanism, Bestiality, etc., are condemned.

To this category belong also the malakoi (men who allowed themselves to be used as women) and the arsenokoitai (those who thus used them). (I. Cor. VI. 9)

Therefore the prohibitions and chastisements of God which strike the various sins of the category are applicable to every species of these sins.

One of the most terrible events of human history is the destruction of Sodom. "Then the Lord rained upon Sodom and upon Gomorrah brimstone and fire from the Lord out of Heaven; and He overthrew those cities, and all the plain, and all the inhabitants of those cities, and that which grew upon the ground." (Gen. XIX. 24, 25)

On the night before the destruction of Sodom two angels had come to Lot's house in Sodom and had lodged therein. The beauty of the apparent bodies of these angels aroused the lust of the Sodomites and they demanded by violence that Lot should deliver the angels to their unnatural desires. "Where are the men who came in to thee this night? Bring them out to us that we may know them." (Gen. XI. 6)

In this genus of sins there will be degrees of evil due to circumstances, but the generic malice of the sin is contracted by every rational being who voluntarily procures unlawful venereal pleasure outside of the natural coitus.

Severe statutes against sodomy and bestiality entered into the Mosaic Code. "Thou shalt not lie with mankind, as with womankind: it is abomination. And thou shalt not lie with any beast to defile thyself therewith: Neither shall any woman stand before a beast to lie down thereto: it is contamination." (Levit. XVIII. 22, 23)

"And if a man lie with mankind, as with womankind, both of them have committed abomination: they shall be put to death." (Levit. XX. 19)

The law could not particularize every forbidden way in which a man may abuse himself. It points out two chief heads under which should be grouped every unlawful venereal act. Aside from the partaking in another's sin the essential malice of sodomy is in the solitary act of self-abuse. In its philosophical aspect it is a mere mechanical difference between the object that excites the genitals in self-abuse, and the contact with the body of a man which is the excitant in sodomy.

The Scriptural legislation therefore of both testaments strikes all the species of masturbation. St. Paul excludes from the Kingdom of Heaven every species of unnatural sexual sins.

It must be borne in mind that masturbation, etc., may bring with them circumstantial sins which must be revealed in confession. If the abuse of nature be accompanied by a desire carnally to enjoy a woman, her status must be declared, viz., whether she be married or single; bound by religious vows or free; a kinswoman within the prohibited degree of kindred or not.

The status of the masturbator may also change the species of the sin, viz., masturbation by a sacred person would have the added malice of sacrilege; masturbation by a married person, has the additional malice of adultery, etc.

The full malice of masturbation is incurred by those who by sensuous kisses, embraces, or looks or words excite themselves to orgasm. This is a frequent sin among the betrothed, and is often very imperfectly confessed in sacramental confession.

Persons of all ages often through shame withhold the necessary statement of their sins. Those guilty of the worst species of masturbation will gloss it by saying that they touched themselves immodestly. Or they may limit their declaration to a statement charging themselves with having been immodest.

Self-incrimination is not an easy thing especially in these shameful excesses. The sinner will use every euphemism at his command and may sin against the integrity of the confession through inability to express himself.

The general tendency of penitents is to gloss the foulness of their sins. If through ignorance, carelessness or lack of sympathy the confessor lend help to this tendency, the penitent will suffer grievous loss.

Some of the worst victims of the dreadful sin of masturbation have confessed to the writer that they never received any specific counsel in the confessional touching the sins of impurity. A pious generality is worse than worthless as a defense against this class of sins. The penitent often

deduces from these weak generalities the inference that the sin is no worse than his venial faults and is lulled into a fatal security.

The confessor is a spiritual physician, and must diagnose the spiritual state of his penitent with patience and skill. This diagnosis must be followed by proper remedies. It is self-evident therefore that the spiritual counselor should be well acquainted with every branch of Pastoral Medicine. Arming himself with the principle that all things are pure to the pure, he must push his studies into the realm of medicine as far as is necessary to enable him to counsel wisely, clearly, and efficaciously.

Theologians of the old school believed that the semen was elaborated by the kidneys, *semen é renibus excisum.* Hence they raised the question as to what might be lawful in case the semen were liberated by the kidneys and being impeded in its flow were in danger of becoming corrupt. They put forth various curious opinions. We have already seen the physiological process of the elaboration of the semen. There is no possibility of its becoming corrupt. If the orgasm be impeded, that part of the semen which has gone forth from the seminal reservoirs will be voided without excitement through the urethra, mingling with the urine. The semen which has not entered on the initial stage of ejaculation is continually absorbed by the system, giving it manly vigor. Hence the state of health will never demand an artificial evacuation of the semen.

Ignorance of physiology also influenced the opinions of theologians on another sexual question, which we shall now treat.

St. Alphonsus a Ligorio (Theol. Moral. Lib. IV, 479) thus presents the question:

"No one is bound to repress an orgasm spontaneously about to take place or already begun as takes place in sleep, provided there be no danger of consent to the voluptuous sensation, and provided there be no wilful active cooperation. In such case one may for the sake of health permit nature to disburden itself: because such act merely suffers that element to be discharged which if retained would injure the health. Wherefore Sanchez is of the same opinion, even though the pollution had its origin in a sinful act, provided that now the penitent repents him of the sinful act, and withdraws his consent; and he adds that for the most part it is advisable to sign oneself with the sign of the cross, and without any active cooperation, with quiet hands pray God not to permit a fall into sinful delectation.

"When the orgasm begins in sleep and the ejaculation of semen takes place in a semi-waking state, then if the man experience a certain degree of delectation not fully deliberate, he sins not, save perhaps venially, as St. Antonius, Navarre, the Salmanticenses and Concina wisely declare. When, however, the orgasm begins in sleep and is consummated in a fully conscious state the patient is not bound to repress it, provided there be no consent to the delectation, and no proximate danger of such consent be foreseen, as judged from past experience.

"The reason is that it is difficult to impede the semen already liberated from the loins, as the Salmanticenses, Navarre, Azor, Trullench and the common opinion of theologians hold.

"And moreover according to Sanchez, Concina, Sporer, Holzmann, Tamburini and the common opinion no one is obliged to impede such a flow of semen, thereby incurring the danger of disease from the corruption of the semen caused by its retention: the patient does not desire the flow of semen, but only suffers it. Nevertheless Gerson rightly advises that in such an event for the advancement of virtue and the shunning of danger, it seems that the man should try to repress his sexual feelings are far as he conveniently can. At least with Sanchez we should advise that the man sign himself with the sign of the cross; that he avert his mind from venereal delectation; that he call on the names of Jesus and Mary, and fervently pray them not to allow him to fall."

We may excise from this excellent doctrine the physiological errors touching the origin of the semen and its corruption. The approbation given to the works of St. Alphonsus does not forbid a divergence from the opinions of St. Alphonsus.

In 1831, Louis Francis Augustus, the Cardinal of Rohan-Chabat, addressed to the Sacred Penitentiary the following questions:

"1. May a professor of Theology safely accept and teach the opinions which St. Alphonsus a Ligorio teaches in his Moral Theology?

"2. Should a confessor be called to question, who in practice in the Sacrament of Penance, follows all the opinions of St. Alphonsus, for the sole reason that nothing worthy of censure by the Holy See was found in the works? The confessor in question reads the works of the aforesaid holy doctor with no other motive save to know accurately his doctrine; not weighing the value of the proofs of the various opinions. He believes that he acts according to sound doctrine, judging that a teaching which contains nothing worthy of censure is therefore safe, sound and in conformity with evangelical holiness."

The Sacred Penitentiary answered the first question in the affirmative, but added a reservation that the sense of this approbation should not be construed to prevent theologians from following opinions of other approved theologians.

The Sacred Penitentiary answered the second question in the negative, which corroborates and confirms the affirmative answer returned to the first question.

It is self-evident therefore that when prudent reasons warrant, a theologian may differ from St. Alphonsus.

The testimony of science is so clear on the points which we have excised, that longer argument is superfluous.

The force of his argument is but little changed by this excision. It remains clearly proven that in an orgasm begun in sleep and enduring after awakening the patient is not bound to any active resistance. The orgasm is an act of nature; the man merely allows nature to act.

In the intense excitement of nature the Merciful Judge and Author of Nature will judge with lenity the act of the man who wishes to preserve himself from moral defilement, and who does the best that he can to inhibit a consent.

It must be borne in mind that if the involuntary orgasm be normal, it is not a moral or physical evil. It is nature's normal disburdening of its excess: considered in this aspect it is lawful to be glad that it take place. This is clearly St. Alphonsus' doctrine. (Ibid 480).

Touching involuntary orgasm which may occur in conscious moments the following principles may be laid down.

It is never lawful to consent to the delectation thence arising from an orgasm outside of lawful marriage; consequently it is not lawful to expose oneself to the proximate occasion of thus consenting.

It is lawful to place an act which in itself is ordered to a right end, even though it be foreseen that contrary to one's intention an orgasm may thence follow.

Provided that there be no formal cooperation, and no danger of consent a man is not obliged to inhibit an involuntary orgasm or repress the progress of a seminal emission. He may allow nature to unburden itself because he thus exerts no active part in the effect, but only allows a physiologic process of nature.

"When sexual maturity is complete, that is after about twenty years, continence is usually facilitated by nocturnal emissions accompanied by corresponding dreams. The health does not suffer from these in any way." (Forel)

A man may be aroused from a dream in the very act of orgasm. In this case the act is lawful, and has no sinful preamble. It is nature's work, beneficent and healthy. The moral law demands of man that he employ no formal cooperation; and, of course, he is held only insofar as he is able. The doubt is always in favor of the penitent. Spontaneous sexual excitement may arise from the organism itself, and also orgasm may be produced by indifferent acts such as riding on horseback, bathing, wrestling, nursing the sick, riding a bicycle, running a sewing machine.

In this case the principle of St. Thomas (II. II. 64, a. 7) is effective: "When a cause has two effects, one good, the other evil, then the cause may be placed with the intention of achieving only the good effect, and permitting the evil effect."

If the act which is the cause of the orgasm be in itself unlawful, and of such nature that it powerfully influence the effect, then the effect must be imputed in all its malice. Such for example are impure embraces, touches, etc. But in order that the cause be chargeable with the malice of the effect, the effect must follow immediately from the cause and have the character of a human act. So, therefore, if a man place a sinful act, such as an impure embrace, and orgasm follows, the cause and effect are comprised as one human act and are chargeable to a man as a mortal sin.

If, however, the same degree of unlawful sexual excitement be indulged in, but no orgasm follow, the degree of sin is the same as in the former case; because the human act is the same. It is not lessened by the mere contingent fact of the failure of the orgasm, for the orgasm in itself is an indifferent thing.

If the orgasm occur later in sleep it does not increase the sinfulness of the precedent sexual excitement. That preceding act has its finished mal-

ice independently of what may happen in the unconscious state of sleep. It stands to reason that a man's sin cannot be aggravated by an effect that takes place when he is unconscious, and in no way able to hinder the effect.

In the statutes of men the law must wait for the effect to follow before fixing the gravity of the crime, but in the moral law it is different. The human law can not see the intent of the act save as revealed by the full effect: the Judge of the moral law by his super-comprehension of mind and duration judges the human act as a complete moral entity as soon as the cause is placed.

As a corollary we may state that no man can declare that an orgasm during sleep is caused by preceding unlawful sexual indulgences. It would be the fallacy of *post hoc ergo propter hoc* thus to argue.

A second valuable corollary is that a man who has sinned mortally by unlawful sexual acts, and thus greatly excited nature, if he repent of his sin, and contritely confess it, he may celebrate mass or receive the Holy Eucharist after such confession, even though an orgasm occur in sleep between the confession and the Mass or Holy Communion.

Among the important principles that the spiritual physician must have ready are the following.

1. The circumstances of the person with whom a venereal sin is committed must be stated in the confession of the sin. However, if there be not other bodily contact, save with the hands, and if the venereal desire be directed merely to sexual delight, and not specifically to the person of the accomplice, theologians teach that mutual masturbation between two persons of whatsoever sex is not sodomy, but simple masturbation.

A person must state any circumstance of his own person which changes the species of the sin. Thus an act of masturbation wrought by a sacred person is sacrilege, etc.

2. In the horrible sin of bestiality neither the species nor the sex of the beast needs be stated in confession.

Though to touch the genital organs of a beast is not bestiality it is a most revolting perversion of the sexual propensity, save in cases of necessity in veterinary practice. If such touch produce an orgasm in the beast, the preponderance of theological opinion judges the act to be a mortal sin. Considering the disgusting depravity of the foul deed, we are amazed to find that Sanchez and Diana declare it to be only a venial sin.

3. A desire to sin is of the same nature as the sin would be if the desire were put into act. Hence its gravity includes every circumstance which the external act would have and these circumstances must be stated in the Confession of the desire. Wherefore, if in masturbation the imagination feeds on a specific object, all of the circumstances of that object enter the species of the sin. This is clear, for in the ideal order the sinner by the power of imagination gives to the object such a reality that it becomes an efficient cause of venereal emotion (St. Alphonsus, Lib. III. IV. 465).

4. A mere barren delectation in the contemplation of an unlawful venereal object is a mortal sin, but the circumstances of the object do not

affect the species of the sin, and are not, therefore, to be confessed, unless by a special act of the mind these very circumstances be made a part of the imagination which is the cause of the delectation (St. Alphonsus, Lib. V. 15; Lib. III. 475).

Many prominent physiologists formerly located the centre of venereal sensations in the cerebellum and the medulla oblongata. In fact the celebrated Descuret, quoted by Debreyne, declares that sexual passions are not always controllable by the will but may depend on disorders of the cerebellum and of the medulla oblongata.

Budge, quoted by Malchow, locates the reflex center for ejaculation of semen at a level of the fourth lumbar vertebra. In his view, when this center is stimulated sufficiently an emission will occur.

The celebrated Dr. Gall declares very positively that the cerebellum and the medulla oblongata are the special organs of sexual love.

Observation seems to warrant that persons with a large cerebellum have strong carnal propensities.

Debreyne, however, declares that it is by no means proven that the aforesaid organs are the seat of sexual desire, and adduces a testimony from Richerand that in St. Anthony's Hospital at Paris a young girl who had no cerebellum whatever was abnormally addicted to the vice of masturbation.

Science has not yet established a certainty in this matter.

The question, however, of the influence of a physiological derangement on moral responsibility is a more pertinent one. May we grant a physiological condition which makes a vice uncontrollable by the will?

Among all sensible sensations there is none so pleasurable as the full effect of venereal excitement. Hence if we find a state in the other passions where habit has subjugated the will we should be justified *a fortiori* in asserting the same of the sexual life.

In this inquiry we must exclude persons of abnormal weak mentality. Nearly all idiots are masturbators, for the reason that their mental faculties are not able to govern their animal propensities.

Their acts are not imputable to them.

But our question is to determine how to deal with a normal human person who declares that he is compelled to masturbate by an irresistible impulse. This question must not be confused with the question, Whether an orgasm may take place which can not be controlled by the will. This we readily grant. But we deny that in such orgasm there be an active normal cooperation which can not be controlled by the will. The orgasm proceeds by certain stages of excitement. These are caused by nature, or by some indifferent act. It is at this point that the principle must be laid down that there is no temptation so powerful that it compels a man acting with the help of divine grace to place a sinful act. For this we have the assurance of Holy Scripture: "No temptation hath taken you but such as man can bear: but God is faithful, who will not suffer you to be tempted above that ye are able; but will with the temptation make also the way of escape, that ye may be able to endure it." (I. Cor. X. 13) "For

God does not command impossible things, but in commanding admonishes that thou do what thou canst; and that thou seek help for what thou canst not: and he helps that thou can. Whose commandments are not grievous (I. John V. 3); whose yoke is easy, and his burden light (Matth. I. 30): for the sons of God love Christ; and they who love him keep his commandments, as he himself testifies (John IV. 15), which surely by divine help they are able to do." (Counc. of Trent, Sess. VI., On Justification, I.)

Physiologists generally admit a degree of sexual emotion in which sense perception passes from the empire of the will, but this state is the climax of the orgasm and is reached by successive stages of emotion. Now if the causes that lead up to the climax be involuntary, then when the limit of the will's control be passed the man is no longer responsible for the effect of nature. In the intense excitement of nature he may be irresistibly impelled to certain acts which in his normal state would be mortal sins. In such state the great longing of nature is for the completion of the orgasm, which by nature's own act has set in. The excitement may arrive at such intensity that manipulation of the genital organs or some equivalent act may be placed. It is a fixed law of conduct that such manipulation or other equivalent act is not lawful. Therefore the presumption is that such act can and ought to be avoided. This presumption cedes its place only to positive evidence that by purely involuntary causes nature has progressed to such a point of sexual emotion that the will temporarily loses its control.

In such a conflict of the powers of human nature it is not possible nor necessary to fix the exact degree of moral responsibility. God alone can determine the precise morality of such an act. It is a principle admitted by all moralists that in doubtful human acts we must always favor the penitent.

A man whose soul is set against unlawful venereal gratification, and who by no wilful act brings on a state as before described my well be presumed not to yield the consent of the will, even though his material acts may directly influence the climax of that which is essentially nature's act. Such acts ought to be confessed, lest perhaps by their omission in confession the love of chastity, and the hatred of impurity be lessened in the soul.

Such cases are perhaps rare, and yet such cases have been submitted to the writer in confession. The patients in every case were reformed masturbators. They needed encouragement far more than blame. They suffered agonies of shame and remorse after the deed. They looked forward with melancholy dread to the recurrence of the state.

Everything in man's life may become disordered. It may be that these emotional states were pathological. In such case the responsibility must be shifted to the pathological cause. And in like manner if physiologists be able to make good their theory that there be in some organ a centre which controls sexual feeling, then a lesion of that organ might produce a state in which sexual excitement might escape the control of the will.

This does not invalidate the principle of man's supremacy over temptation as enunciated by St. Paul. Such supremacy is not asserted to be man's inherent power independently of the help of God. St. Paul pledges the faith of God as a guarantee that God will give help in temptation that a man may be able to endure. This surely supposes that if God's help be not given the man may meet a temptation that he can not endure. How then shall we combine this certain teaching with the human experience which we have exposed? We believe that a man who places no obstacle in the way of God's grace need never be overcome by temptation. In fact, that is of faith as the Council of Trent above cited clearly proves. If such a man falls he is responsible for his fall. In the case therefore of a man who yields to the aforesaid acts in the intense sexual excitement attendant on an orgasm we face an uncertainty, that no created mind can fix the degree in which the will consents to these acts. In the hypothesis, however, that a state may arise in which man is powerless to resist the stress, man is not in such case overcome by a temptation that man can not bear. The orgasm in itself is an indifferent act. It only becomes evil when consented to outside of lawful marriage. Therefore the defect of free consent leaves the act a mere function of nature.

Sometimes we find that persons addicted to the vice of self-abuse become so weakened in mind that they are for a time incapable of that resolution or purpose necessary to suppress the habit. These cases may be found in young boys and also in adults who have been excessively addicted to the vice, or who are naturally inferior types. Even though the weakness of the mind be the effect of a man's wilful act, it lessens the responsibility. If such weakness reach the state of idiocy, it eliminates moral responsibility. Therefore a man will be held responsible in proportion to the degree of his understanding.

It is a fatal error to believe that because a temptation is strong it be therefore irresistible. Man is called on to fight temptation. To fight supposes active valiant resistance; it supposes the throwing into the struggle all our energy. A fine example of a man aided by God's grace fighting temptation is found in the life of St. Jerome. In his letter to Eustochium known as letter XXII. he gives us a glimpse of his spiritual combat:

"And, I, who through the fear of hell, had condemned myself to this prison inhabited by scorpions and serpents, imagined myself transplanted into the midst of the dances of the young Roman maidens. My face was pallid with fasting, my body cold as ice, yet my soul burned with sensual emotion, and in my flesh already dead only the fire of the passions was still capable of kindling. Debarred from all help, I threw myself at the feet of Jesus, watered them with my tears, wiped them with my hair, and strove to subdue my rebellious flesh by weeks of abstinence. I do not blush to own to misery, rather do I weep that I am no longer as I once was. I remember to have often spent the entire day and night in crying aloud and in beating my breast, until at the command of God who rules the tempest, peace crept back into my soul. I even dreaded my cell as if it had been an accomplice to my thoughts. Angry with myself I penetrated alone further into the desert, and if I discovered any dark valley,

any rugged mountain, and rock of difficult access, it was the spot I fixed upon to pray in and of which to make a prison for my wretched body. God is witness that sometimes, after having long fixed my eyes upon heaven and after copious weeping, I believed myself transported among the choirs of angels. Then in a trusting and joyful ecstacy I sang unto the Lord: We pursue Thee by the fragrance of thy ointments."

Another allusion to his struggle against temptation is found in Jerome's Letter to Rusticus (Epist. CXXV.):

"When I was young, although buried in the desert, I could not conquer my burning passions and ardent nature, and in spite of my body being exhausted by perpetual fasts, my brain was on fire with evil thoughts."

Jerome does not hesitate to declare that in his youth he had fallen. In his letter to Chromatius he makes this candid confession:

"You know how slippery are those pathways of youth where I succumbed."

In his letter to Heliodorus he delivers a sad warning:

"Why linger in the world, thou who hast already chosen solitude? If I give thee this advice it is not as if my ship and my cargo were undamaged, not as if I were ignorant of the deep, but rather as one shipwrecked and just cast up upon the shore, in feeble tones I warn the navigators of their peril" (Epist. XIV.).

We have here the example of a strong man fighting the great battle of humanity. Since the day when "the sons of God saw the daughters of men that they were fair, and they took to them wives of all that they chose," the lust of the flesh has been the most powerful adversary of the spirit. Man's life is a warfare, a warfare demands action, bravery, constancy, courage, faith in our cause.

The victim of masturbation will have a low morale. He has weakened all his powers. He lacks proper ambition, proper courage, proper ideals. The finest things in life have been dragged down and prostituted to his nasty vice.

He has become a maggot, finding his pleasure in filth. He has no interest in pure things; he is absent-minded in the company of the good; his mind is on his idols, his unclean apprehensions. In his mind woman is never contemplated as his spiritual counterpart, his inspiration to honor and love. His whole attitude toward nature is perverted.

It is not easy to wrench a man away from such an attitude. Unless by natural endowment he be of extraordinary character, he will pine for the flesh-pots of Egypt during the journey through the desert that every man must traverse, who breaks away from evil habits, before he can find peace.

Prayer and the Sacraments are the chief remedy. He should be encouraged: the best counselor to encourage him is the confessor. This encouragement must be physiological and moral. He must be inspired to hope to regain a place in the sun among men. His enfeebled will must be strengthened by the reasonable hope that nature can rapidly recuperate its lost vigor. A prudent plan of life must be arranged in which natural and supernatural agencies must be assigned their respective functions. A

great help is a correct knowledge of the physiological processes that control the sex life.

A certain periodicity has been observed in the seminal emissions of celibate man. Dr. F. H. Perry-Coste, B. Sc. (Lond.) gives us the results of observations made upon himself:

"During some eight or ten years I have carefully recorded the occurrence of such discharges as I have experienced myself, and I have now accumulated sufficient data to justify an attempt to formulate some provisional conclusions.

"In order to render these observations as serviceable as may be to students of periodicity, I here repeat (at the request of Mr. Havelock Ellis) the statement which was subjoined, for the same reasons, to my 'Rhythm of the Pulse.' These observations upon myself were made between the ages of 20 and 33. I am about 5 feet, 9 inches tall, broad-shouldered, and weigh about 10 stone 3 lbs. net—this weight being, I believe, about 7 lbs. below the normal for my height. Also I have green-brown eyes, very dark-brown hair, and a complexion that leads strangers frequently to mistake me for a foreigner—this complexion being, perhaps, attributable to some Huguenot blood, although on the maternal side I am, so far as all information goes, pure English. I can stand a good deal of heat, enjoy relaxing climates, am at once upset by 'bracing' sea-air, hate the cold, and sweat profusely after exercise. To this it will suffice to add that my temperament is of a decidedly nervous and emotional type.

"Before proceeding to remark upon the various rhythms that I have discovered, I will tabulate the data on which my conclusions are founded. The number of discharges recorded in the years in question are as follows:

In 1886, 30. (Records commenced in April.)
In 1887, 40.
In 1888, 37.
In 1889, 18. (Pretty certainly not fully recorded.)
In 1890, 0. (No records kept this year.)
In 1891, 19. (Records recommenced in June.)
In 1892, 35.
In 1893, 40.
In 1895, 36.
In 1896, 36.
In 1897, 35.
Average 37. (Omitting 1886, 1889, and 1891.)

"Thus I have completed records for eight years, and incomplete records for three more; and the remarkable concord between the respective annual numbers of observations in these 8 years not only affords us intrinsic evidence of the accuracy of my records, but, also, at once proves that there is an undeniable regularity in the occurrence of these sexual discharges, and therefore, gives us reason for expecting to find this regularity rhythmical. Moreover, since it seemed reasonable to expect that there might be more than one rhythm, I have examined my data with a view to discovering (1) an annual, (2) a lunar-monthly, and (3) a weekly rhythm, and I now proceed to show that all three such rhythms exist." (Havelock Ellis)

Perry-Coste's further deductions to establish the rhythms seem worthless. His personal experience is valuable.

The three greatest contributions to Medical Literature on the subject of involuntary seminal emissions are the treatises of Lallemand, Curschmann, and Fürbringer.

"As normal, not morbid, seminal losses Lallemand regarded pollutions in healthy, sexually mature, continent individuals, occurring spontaneously during sleep, associated with erection of the penis and voluptuous sensations. He rightly regarded these as physiologically necessary, indicated their purpose to be the discharge of sexual tension, the prevention of an excessive accumulation of the reproductive products, and compared their effect with that of hemorrhages from the nose, which are so common in youth, and in most cases are distinctly beneficial. But he drew attention to the indeterminate, fluctuating boundary-line between normal and morbid pollutions. This latter point of view is dealt with also by Eulenburg ('Sexual Neurasthenia,' p. 171), in opposition to other authors who regarded all pollutions, even the physiological, as abnormal. In practice, however, it is generally not difficult to distinguish between physiological and morbid seminal losses. The former are characterized, not only by the distinctive signs already mentioned, but also by their occurrence at longer intervals, and by the absence of any disadvantageous effect upon the general state of health. As soon as pollutions have such a deleterious influence they are morbid; and they are generally morbid when they occur abnormally early, before puberty, with abnormal frequency, at abnormal times of the day, and in association with abnormal conditions of the genital organs. According to Fürbringer, the normal intervals between pollutions in the case of continent youths vary between ten and thirty days. Löwenfeld considers pollutions occurring once a week, and even the transient occurrences of pollutions on several successive nights, as a result of sexual excitement, as still being within normal bounds. But if these repeated pollutions within a single week, or even within a single day, continue for a long time, we are always concerned with morbid pollutions. These sometimes occur not only at night, but also—a fact to which the German physician Wichmann, in his dissertation De Pollutione Diurna (Göttingen, 1782), drew attention—they occur by day ('diurnal pollutions'), in the waking state, without masturbation or coitus, upon slight mechanical or physical stimulation. In such cases erection of the penis is often completely wanting; ejaculation of the semen takes place with the organ flaccid, and even without any voluptuous sensation. In many cases, indeed, these pollutions are accompanied by actual painful sensations in the genital organs, and instead of voluptuous dreams or thoughts, the nocturnal ejaculation is accompanied by anxious dreams, the daylight pollution by an extremely disagreeable sensation. Commonly in these pollutions ordinary semen is at first evacuated—a mixture of the secretions of the testicles, the prostate, the vesiculae seminales, and Cowper's glands—containing numerous spermatozoa. After the trouble has lasted a long time the semen becomes thinner (owing to its containing a smaller proportion of the thick testicular secretion) and more transparent; the spermatozoa are

less numerous and mostly undeveloped, and ultimately they may be completely absent. Löwenfeld observed a peculiar form of pollution in which the semen was ejaculated only in drops, or might be completely wanting —that is to say, there might be a pollution without ejaculation, purely a voluptuous orgasm.

"In such cases Löwenfeld was able to prove that it is not the loss of semen which weakens, as Lallemand assumed, but that it is the nervous disturbance of the lumbar spinal cord which plays the principal part. This irritable weakness of the lumber spinal cord may have existed for a long time before, or may have developed only as the result of repeated pollutions or of excessive sexual excitement; it may give rise, not only to proper seminal emissions, but, in addition, to 'spermatorrhoea'—that is to say, to the outflow of semen accompanying urination or defaecation; and it may also cause the rarer 'prostatorrhoea'—the outflow of the secretion of the prostate gland. A long duration of all of these morbid discharges has a serious effect on the health, and induces the typical picture of sexual neurasthenia. As a cause of seminal losses we must mention masturbation, excessive sexual intercourse, chronic inflammation of the urethra (especially after gonorrhoea), stricture of the urethra, rectal affections, alcoholism, diabetes, and tabes dorsalis.

"In women, also, processes analogous to pollution may be observed, although much more rarely than in men, and generally as a consequence of masturbation practised for several years. According to Adler (op. cit., p. 130), pollutions—that is to say, evacuations of the secretions of the vaginal glands and of the uterine mucous membrane, as well as of the secretion of Bartholin's glands near the vaginal inlet—never occur in chaste and intact virgins, but only in women who have already learned the enjoyment of sexual intercourse, and who are subsequently compelled to lead a continent life. For this reason pollutions are a 'trouble of young widows,' and occur in young girls only when they have learned to know the nature of sexual pleasure by means of masturbation." (Iwan Bloch)

Closely associated with masturbation are sodomy and many sexual perversions of both sexes. Chief of these are *Masochism, Sadism, Fetichism, Necrofilia,* et alia quae nec proloqui nec cogitare fas est.

The classic authority on these sexual deviations is Dr. R. v. Krafft-Ebing (Psycopathia Sexualis).

Masochism is named from the Austrian novelist Leopold von Sacher-Masoch (1835-1895) who described it in his novels, Vermächtnis Kains, Venus in Pelz, etc. From the evidence submitted by von Eulenburg and von Krafft-Ebing it seems that von Sacher-Masoch was a victim of the sexual perversion which he first scientifically described.

We cite a few characteristic passages from von Sacher-Masoch's Venus in Furs, in which he narrates Severin's unnatural delight to be dominated by Wanda.

"But, Severin," replied Wanda, almost angrily, "do you believe me capable of maltreating a man who loves me as you do, and whom I love?"

"Why not, if I adore you the more on this account? IT IS POSSIBLE TO LOVE REALLY ONLY THAT WHICH STANDS ABOVE US, a woman, who through her beauty, temperament, intelligence, and strength of will subjugates us and becomes a despot over us."

"Then that which repels others, attracts you."

"Yes. That is the strange part of me."

* * * *

I am back, tired, hungry, thirsty, and more in love than ever. I quickly change my clothes, and a few moments later knock at her door.

"Come in!"

I enter. She is standing in the center of the room, dressed in a gown of white satin which floods down her body like light. Over it she wears a scarlet KAZABAIKA, richly edged with ermine. Upon her powdered, snowy hair is a little diadem of diamonds. She stands with her arms folded across her breast, and with her brows contracted.

"Wanda!" I run toward her, and am about to throw my arm about her to kiss her. She retreats a step, measuring me from top to bottom.

"Slave!"

"Mistress!" I kneel down, and kiss the hem of her garment.

"That is as it should be."

"Oh, how beautiful you are."

"Do I please you?" She stepped before the mirror, and looked at herself with proud satisfaction.

"I shall become mad!"

Her lower lip twitched derisively, and she looked at me mockingly from behind half-closed lids.

"Give me the whip."

I looked about the room.

"No," she exclaimed, "stay as you are, kneeling." She went over to the fireplace, took the whip from the mantle-piece, and, watching me with a smile, let it hiss through the air; then she slowly rolled up the sleeve of her fur-jacket.

"Marvellous woman!" I exclaimed.

"Silence, slave!" She suddenly scowled, looked savage, and struck me with the whip. A moment later she threw her arm tenderly about me, and pityingly bent down to me. "Did I hurt you?" she asked, half-shyly, half-timidly.

"No," I replied, "and even if you had, pains that come through you are a joy. Strike again, if it gives you pleasure."

"But it doesn't give me pleasure."

Again I was seized with that strange intoxication.

"Whip me," I begged, "whip me without mercy."

Wanda swung the whip, and hit me twice. "Are you satisfied now?"

"No."

"Seriously, no?"

"Whip me, I beg you, it is a joy to me."

"Yes, because you know very well that it isn't serious," she replied, "because I haven't the heart to hurt you. This brutal game goes against my grain. Were I really the woman who beats her slaves you would be horrified."

"No, Wanda," I replied, "I love you more than myself; I am devoted to you for death and life. In all seriousness, you can do with me whatever you will, whatever your caprice suggests."

"Severin!"

"Tread me underfoot!" I exclaimed, and flung myself face to the floor before her.

"I hate all this play-acting," said Wanda impatiently.

"Well, then maltreat me seriously."

An uncanny pause.

"Severin, I warn you for the last time," began Wanda.

"If you love me, be cruel towards me," I pleaded with upraised eyes.

"If I love you," repeated Wanda. "Very well!" She stepped back and looked at me with a sombre smile. "BE THEN MY SLAVE, AND KNOW WHAT IT MEANS TO BE DELIVERED INTO THE HANDS OF A WOMAN." And at the same moment she gave me a kick.

"How do you like that, slave?"

Then she flourished the whip.

"Get up!"

I was about to rise.

"Not that way," she commanded, "on your knees."

I obeyed, and she began to apply the lash.

The blows fell rapidly and powerfully on my back and arms. Each one cut into my flesh and burned there, but the pains enraptured me. They came from her whom I adored, and for whom I was ready at any hour to lay down my life.

* * * *

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Suddenly she thrusts me away with her foot, leaps up, and pulls the bell-rope. In answer to its sound three young, slender negresses enter; they are as if carved of ebony, and are dressed from head to foot in red satin; each one has a rope in her hand.

Suddenly I realize my position, and am about to rise. Wanda stands proudly erect, her cold beautiful face with its sombre brows and contemptuous eyes is turned toward me. She stands before me as mistress, commanding, gives a sign with her hand, and before I really know what has happened to me the negresses have dragged me to the ground, and have tied me hand and foot. As in the case of one about to be executed my arms are bound behind my back, so that I can scarcely move.

"Give me the whip, Haydee," commands Wanda, with unearthly calm.

The negress hands it to her mistress, kneeling.

"And now take off my heavy furs," she continues, "they impede me."

The negress obeyed.

"The jacket there!" Wanda commanded.

Haydee quickly brought her the KAZABAIKA, set with ermine, which lay on the bed, and Wanda slipped into it with two inimitably graceful movements.

"Now tie him to the pillar here!"

The negresses lifted me up, and twisting a heavy rope around my body, tied me standing against one of the massive pillars which supported the top of the wide Italian bed.

Then they suddenly disappeared, as if the earth had swallowed them.

Wanda swiftly approached me. Her white satin dress flowed behind her in a long train, like silver, like moonlight; her hair flared like flames against the white fur of her jacket. Now she stood in front of me with her left hand firmly planted on her hips, in her right hand she held the whip. She uttered an abrupt laugh.

"Now play has come to an end between us," she said with heartless coldness. "Now we will begin in dead earnest. You fool, I laugh at you and despise you; you who in your insane infatuation have given yourself as a plaything to ME, the frivolous and capricious woman. You are no longer the man I love, but MY SLAVE, at my mercy even unto life and death.

"You shall know me!

"First of all you shall have a taste of the whip in all seriousness, without having done anything to deserve it, so that you may understand what to expect, if you are awkward, disobedient, or refractory."

With a wild grace she rolled back her fur-lined sleeve, and struck me across the back.

I winced, for the whip cut like a knife into my flesh.

"Well, how do you like that?" she exclaimed.

I was silent.

"Just wait, you will yet whine like a dog beneath my whip," she threatened, and simultaneously began to strike me again.

The blows fell quickly, in rapid succession, with terrific force upon my back, arms, and neck; I had to grit my teeth not to scream aloud. Now she struck me in the face, warm blood ran down, but she laughed, and continued her blows.

"It is only now I understand you," she exclaimed. "It really is a joy to have some one so completely in one's power, and a man at that, who loves you—you do love me?—No—Oh! I'll tear you to shreds yet, and with each blow my pleasure will grow. Now, twist like a worm, scream, whine! You will find no mercy in me!"

Finally she seemed tired.

She tossed the whip aside, stretched out on the ottoman, and rang.

The negresses entered.

"Untie him!"

As they loosened the rope, I fell to the floor like a lump of wood. The black women grinned, showing their white teeth.

"Untie the rope around his feet."

They did it, but I was unable to rise.

"Come over here, Gregor."

I approached the beautiful woman. Never did she seem more seductive to me than to-day in spite of all her cruelty and contempt.

"One step further," Wanda commanded. "Now kneel down, and kiss my foot."

She extended her foot beyond the hem of white satin, and I, the supersensual fool, pressed my lips upon it.

"Now, you won't lay eyes on me for an entire month, Gregor," she said seriously. "I want to become a stranger to you, so you will more easily adjust yourself to our new relationship. In the meantime you will work in the garden, and await my orders. Now, off with you, slave!"

There can scarcely be said to be a moral in von Sacher-Masoch's fantastic work, but, at all events, in the finale, Wanda truthfully declares that woman despises a Masochist: woman's ideal is to be lovingly dominated by a strong man. Mental strength is rated higher than physical strength. It is a higher superiority.

Masochism in the man may be regarded as a "pathological degeneration of the distinctive psychical peculiarities of women." (Von Krafft-Ebing)

Psychical masochism is far more common than the actual deed.

An abnormal development of this feeling in woman is pathologic.

The means of arousing libido and satisfying it are manifold: some of these are most disgusting. Flagellation, binding, biting, cutting, bruising, menial services, etc., are used. The masochist will even eat the excrements and drink the urine of his perverse accomplices. Von Krafft-Ebing cites a case:

"Valde delectatur si sanguinem menstrualem ex vagina effluentem sugere potest."

"Masochism is the opposite of sadism. While the latter is the desire to cause pain and use force, the former is the wish to suffer pain and be subjected to force.

"By masochism I understand a peculiar perversion of the psychical *vita sexualis* in which the individual affected, in sexual feeling and thought, is controlled by the idea of being completely and unconditionally subject to the will of a person of the opposite sex; of being treated by this person as by a master, humiliated and abused. This idea is colored by lustful feeling; the masochist lives in fancies, in which he creates situations of this kind and often attempts to realize them. By this perversion his sexual instinct is often made more or less insensible to the normal charms of the opposite sex—incapable of a normal *vita sexualis*—psychically impotent. But this psychical impotence does not in any way depend upon a *horror sexus alterius,* but upon the fact that the perverse instinct finds an adequate satisfaction differing from the normal—in woman, to be sure, but not in coitus.

"But cases also occur in which with the perverse impulse there is still some sensibility to normal stimuli, and intercourse under normal conditions takes place. In other cases the impotence is not purely psychical, but physical, *i.e.*, spinal; for this perversion, like almost all other perversions of the sexual instinct, is developed only on the basis of a psychopathic and, for the most part, hereditarily tainted individuality; and as a rule such individuals are given to excesses, particularly masturbation, to which the difficulty of attaining what their fancy creates drives them again and again." (Von Krafft-Ebing)

The masochism may be suffered in connection with coitus or as a substitute thereof.

In a certain sense Masochism may be considered the physiologic sexual status of woman. She is the passive agent in coitus: nature fits her for her part by endowing her with a desire to be subjected to the active agent in procreation. It is a virtue in woman, commanded by St. Paul,

to be subject to their husbands. The loving, honorable mastery of the male is desired by the normal woman.

"The stroke of death is as a lover's pinch,
"Which hurts and is desired." (Ant. and Cleopatra)

Some may marvel that I cite such a crimen nefandum. I believe that the physician of souls should know what diseases prey upon humanity. In my own experience I have dealt with every one of the foregoing perversions. There is no violation of the demands of decency or chastity in a scientific treatise of sexual disorders.

Von Krafft-Ebing associates *Fetichism* with Masochism.

"By fetichists I understand individuals whose sexual interest is concentrated exclusively on certain parts of the female body, or on certain portions of female attire. One of the most frequent forms of this fetichism is that in which the female foot or shoe is the fetich, and becomes the exclusive object of sexual feeling and desire. It is highly probable, and shown by a correct classification of the observed cases, that the majority —and perhaps all—of the cases of shoe fetichism, rest upon a basis of more or less conscious masochistic desire for self-humiliation."

"Fetichism of inanimate objects or articles of dress, however, in all cases, may well be regarded as a pathological phenomenon, since its object falls without the circle of normal sexual stimuli. But even here, in the phenomena, there is certain outward correspondence with processes of the normal psychical *vita sexualis;* the inner connection and meaning of pathological fetichism, however, are entirely different. In the ecstatic love of a man mentally normal, a handkerchief or shoe, a glove or letter, the flower 'she gave,' or a lock of hair, etc., may become the object of worship, but only because they represent a mnemonic symbol of the beloved person—absent or dead—whose whole personality is reproduced by them. The pathological fetichist has no such relations. The fetich constitutes the entire content of his idea. When he becomes aware of its presence, sexual excitement occurs, and the fetich makes itself felt." (Von Krafft-Ebing)

I have found a case where a portion of the pubic hair of a woman was carried in a man's watch as a fetich.

Sadism is named from the Marquis de Sade, the supposed author of "The One Hundred and Twenty Days of Sodom." Recently A. Moll has declared this work a forgery. Albert Eulenburg and Iwan Bloch defend his authorship.

The sadistic complex seeks its gratification in inflicting pain on the victim. The sex impulse is present: mutilation of the victim either precedes or follows the victim's death. On May 8, 1927, in Rome, Italy, police after a two weeks' hunt captured Gino Girolimoni, 40, an Italian lawyer known as "Jack the Strangler," who is accused of choking and stabbing to death five little girls ranging from 3 to 5 years old. The last victim was found mutilated in the garden of the famous restaurant "Castle of Caesar," known to thousands of American tourists.

"The perfect counterpart of masochism is sadism. While in the former there is a desire to suffer and be subjected to violence, in the latter the wish is to inflict pain and use violence.

"The parallelism is perfect. All the acts and situations used by the sadist in the active *role* become the object of the desire of the masochist in the passive *role*. In both perversions these acts advance from purely symbolic acts to severe maltreatment. Even murder, in which sadism reaches its acme, finds,—of course only in fancy,—its passive counterpart. Under favoring conditions, both perversions may occur with a normal *vita sexualis;* in both, the acts in which they express themselves are preparatory to coitus or substitutes for it.

"But the analogy does not exist simply in external manifestations; it also extends to the intrinsic character of both perversions. Both are to be regarded as original psychopathies in mentally abnormal individuals, who, in particular, are affected with psychical *hyperaesthesia sexualis,* and, as a rule, also with other abnormalities; and for each of these perversions two constituent elements may be demonstrated, which have their roots in psychical facts lying within physiological limits. In masochism, as shown above, these elements lie in the fact (1) that in the state of sexual emotion every impression produced by the consort, independntly of the manner of its production, is, *per se,* attended with lustful pleasure, which, when accompanied by *hyperaesthesia sexualis,* may go so far as to overcompensate all painful sensation; and in the fact (2) that 'sexual bondage,' dependent on mental factors—in themselves not perverse—may, under pathological conditions, become a perverse, pleasurable desire for subjection to the opposite sex, which—even if its inheritance from the female side need not be presupposed—represents a pathological degeneration of the character (really belonging to woman) of the instinct of subordination, physiological in woman." (Von Krafft-Ebing)

Fearful crimes and mutilations are perpetrated under the sadistic impulse. In 1440 Marschalls Giles de Rays was executed at Paris. He had mutilated and murdered over 800 children. He had two assistants. He locked his victims in a castle, tortured them and then killed them. He confessed that he experienced therein inexpressible sexual delight. He preserved some beautiful heads of children as fetiches.

"Such monstrous sadistic acts have, however, in men, in whom they are much more frequent than in women, another source of physiological conditions. In the intercourse of the sexes, the active or aggressive *role* belongs to man; woman remains passive, defensive. It affords man great pleasure to win a woman, to conquer her; and in the *ars amandi,* the modesty of woman, who keeps herself on the defensive until the moment of surrender, is an element of great physiological significance and importance. Under normal conditions man meets obstacles which it is his part to overcome, and for which nature has given him an aggressive character. This aggressive character, however, under pathological conditions may likewise be excessively developed, and express itself in an impulse to subdue absolutely the object of desire, even to destroy or kill it.

"If both these constituent elements occur together—the abnormally intensified impulse to a violent reaction toward the object of the stimulus, and the abnormally intensified desire to conquer the woman,—then the most violent outbreaks in sadism occur.

"Sadism is thus nothing else than an excessive and monstrous pathological intensification of phenomena,—possible, too, in normal conditions in rudimental forms,—which accompany the psychical *vita sexualis,* particularly in males. It is of course not at all necessary, and not even the rule, that the sadistic individual should be conscious of his instinct. What he feels, is as a rule, only the impulse to cruel and violent treatment of the opposite sex, and the coloring of the idea of such acts with lustful feelings. Thus arises a powerful impulse to commit the imagined deeds. In as far as the actual motives of this instinct are not comprehended by the individual, the sadistic acts have the character of impulsive deeds."

Sadism explains why many rapists kill their victims.

Sadism is often practiced on animals.

A peculiar case of female masochism came under my observation. A woman was accustomed to beat her nude body while looking at herself in a mirror. Orgasm was thus effected.

The form of auto-erotism which consists in delighting in the view of one's own naked body has been named by Näcke *Narcissism* after the myth of Narcissus. Thus to take sexual delight is a deadly sin.

Necrophilia is a rare form of sexual perversity, in which a man has coitus with a cadaver. The deed is so horrible that some authors consider it an evidence of insanity.

Mutilation of cadavers is a form of necrophilia.

In the year 1925 at Milwaukee, Wis., N. murdered a woman, for which crime he was sentenced to imprisonment for life at Waupun. The court records of the case attest that he committed necrophilia on his victim.

Theologians list necrophilia under the head of masturbation as also a perverse use of a doll or of a statue. If, however, the person of the dead woman be the objective in which the lust tends the act is fornicarious and must be confessed as such with all circumstances which change the species of the act.

A concubitus with a living, unconscious woman must be confessed as a concubitus, and her status must be stated.

To touch such a woman with wilful lust is mere masturbation, inconsummate or consummate as the case may be.

The confessor must realize that for the penitent the confession of sexual sins is a disagreeable duty, which if allowed, he will often inadequately fulfill. The confessor must save the penitent from all unnecessary embarrassment and at the same time save the integrity of the sacrament. A master knowledge of the whole field, a study of pedagogy, and a sovereign prudence are requisite.

A child may confess: "I was naughty." This may mean little childish faults or it may mean immodesty. The general tenor of the child's life, his age, his bearing must determine. The child's possible innocence must not be broken, save in case of a reasonable judgment that the child be vicious.

In their embarrassment penitents rapidly, and often incoherently, may confess sexual sins. In this case to the intelligent confessor *verbum sat sapienti.* He must with gentle firmness, and with absence of all sex consciousness, aid the penitent to a clearer statement of the sins and their specifically differentiating circumstances.

The penitent may declare:

"I have been unchaste in thought, word and deed."

This, of course, must be untangled, and the specific sins stated.

The statement, "I was immodest," leaves the issue in the air, and demands the confessor's inquiry touching the nature of the immodesty. All unnecessary details must be suppressed.

It is not unusual for an onanistic wife to confess her sin thus: "I was careful", or: "I told my husband to be careful", or she may say: "I am not very strong, and I do not want any more children, until I am stronger."

The confessor must gently and with becoming dignity aid the woman properly to confess her sin.

To say: "I was in bad company," may mean sinful actions; these must be elucidated.

The foul sin of self-abuse is sometimes glossed by the euphemism: "I touched myself immodestly." This is an imperfect confession.

Rarely do penitents distinguish between wilful impure thoughts, and involuntary impure temptations. The aid of the confessor is needed. It is not easy, at times, to draw the line. Then sins may be declared as they are in the eyes of God.

Rude penitents sometimes confess that they have had carnal intercourse. I have found persons so ignorant that they believed the conjugal embrace to be a sin. These are rare. But, especially in rural districts, penitents may mean thereby Onanistic intercourse. I have had several cases of such ignorance.

Rural Ethics.—It is the belief of many that the rural population be freer from vices than the urban dwellers.

In 1927 the New York State Crime Commission published its report on the Red Hook section of Brooklyn and on two widely separated counties of the aforesaid state. The report presents a melancholy picture of bucolic vice.

1. School facilities are poor; the schools are inefficient.
2. The youth are not interested in farming: they wander about seeking amusement in moving picture theatres and dances.
3. The dances are often coarse and immoral.
4. Bootleg whiskey is a menace to health and morals.
5. There is much sex license.
6. The laws are not enforced.
7. The tastes of the people are coarse: they are fond of pornographic literature.
8. The home influence, the school influence, and the church influence have declined.

Close observation confirms the report.

In my varied experience I have found more ignorance, and coarser sins among rural dwellers than among the people of the cities. "Back to the farms" may be a good economic slogan, but in religion it is a move toward paganism.

"The attention of the church is more easily concentrated on those who are crowded together than in places where communities are scattered. In a large city spiritual cultivation, in my judgment, is more assured." (Cardinal Hayes of New York)

At times the terminology of ignorant penitents is so coarse that we refrain from stating it. The zealous confessor may by painstaking infer what they attempt to make known.

"I am in trouble" is a usual euphemism to declare a woman's pregnancy through sin.

Meretrices saepe membrum virile sugunt: horribilia et vix intelligilia sunt verba quibus penitentes hoc peccatum confiteri conantur.

Bestiality is usually contemplated by the phrase: "I sinned with animals." I have found ignorant persons who confessed such sin as adultery.

The penitent who declares that he knows not how to confess his sin, or who is held by seemingly insurmountable embarrassment, should be sympathetically helped by a gradual and mild approach through the less heinous sins until the real ulcer is reached.

Sexologists recommend to adolescent youth to cleanse the smegma from the genital organs by a bathing of the parts in cool water.

The menstruating girl should use warm water.

This manner of cleansing the parts is the proper ideal, but in poorly furnished homes and especially among ignorant youth it can not be realized. For many boys the only bath available is the plunge in the old swimming pool in the warm season. For girls in similar environment, a wet cloth is the only means of deterging the menstrual concretion. They could do better, but their education has not touched upon such personal care. I have known cases where even girls passed through a virtuous adolescence and maidenhood into a fruitful marriage, who never bathed. During the catamenia no sanitary napkins were used. The discharge flowed out upon the underclothing, and the concretion upon the vulva dried and was partially removed by the attrition of the clothing. The boys in the same environment removed the smegma with their fingers, or with a green leaf, or scrap of paper.

These conditions are not ideal, but I believe that such conditions exist among a majority of boys. The extreme lack of personal hygiene which I have pointed out among girls is surely rarely existent.

Never may the priest instruct girls in such matters of personal hygiene. In proper circumstances and with scientific accuracy and dignity boys may be instructed. We must not exaggerate the harm of these concretions. There is no physical harm save a certain pruritus. The female ape allows the menstrual discharge to adhere to her vulva and suffers no hurt. Moreover though the sex instinct is stimulated by this lack of cleanliness, virtue is possible.

REPRODUCTION

Obstetrics is the most arduous part of medical practice: it is also the most important: two lives are involved in one physiological process: nowhere can the physician work so much good or so much evil. For this cause good maternity hospitals and obstetric specialists should be highly favored. Obstetrics should be raised from the low plane which it has hitherto occupied: it should be taken out of the hands of men of mediocre skill and of low moral standards.

Birth in man and beast is a normal function: it is nature's invariable process to reproduce itself. In healthy animals the birth process is attended by few pathologic disturbances. But in man the sequel of original sin falls heavily on the birth process.

"Unto the woman he said: I will greatly multiply thy pains in thy conception; in pain shalt thou bring forth children." Gen. III, 16.

The obstetric art can not remove this primal malediction; but it should bring scientific knowledge and skill to lighten, as much as possible, the labor and danger of childbirth and to bring into the world a living sound child capable of continued extra-uterine existence. Obstetrics should therefore occupy itself with all the cycle of the reproductive function,—with all the processes, the diseases, and the accidents thereof. It will thus labor to heal sterility, to safeguard gestation, to deliver, by surgery, if necessary, the new born babe, and to repair the lacerations, and other evils incident to parturition. Wrong methods of life have greatly lowered the vigor and physiological efficiency of American women. It is estimated that from 3 to 5 per cent. of our children die during delivery. Many more are crippled; and whereas a world census justifies the estimate that 95 per cent. of childbirths are normal, the American percentage is far below that rate. Some estimate that 50 per cent. of our puerperae suffer permanent injury. This estimate is too high, but even if divided by two it is appalling. Its worst consequences are onanism and abortions.

According to the U. S. Govt. Report in 1922 the rate of mortality of puerperae was 1 in 150. This statistic is misleading. In the first place, many deaths are not therein reported: and the multitudinous injuries not immediately resulting in death are not included. Maternal mortality is uniformly higher in the United States than in foreign countries. It is increasing. An increase of 15 per cent. took place in the first six months of 1920 compared to 1919.

According to the official statistics of the U. S. Children's Bureau, Washington, D. C., for 1919, in the United States Birth Registration Area the rate of maternal mortality per 1000 births was 7.4; in 1920 it was 8.

In England and Wales in 1919, it was 4.4; in New Zealand, 5.1; in Scotland, 6.2; in the Netherlands, 3.4. In no country of which we have statistics is it as high as in ours.

In 1923 the maternal mortality of Canada (exclusive of Quebec) was 5.4. Puerperal sepsis is usually the cause of the most of such maternal mortality. This proves the necessity of aseptic precautions.

The least a mother should do to prepare for her baby's birth.—Every expectant mother, for her own sake and for her baby's, should go to a doctor or health center as soon as she thinks she is pregnant, so that she may make sure that she is fitted for the extra strain of pregnancy and labor.

A complete physical examination will show a mother's general health. This should include besides a vaginal examination an examination of the heart, lungs, kidneys, digestive organs, teeth, tonsils, thyroid, blood pressure, weight, and measurements of the bony framework. A blood test may also be necessary.

Regular monthly visits to the doctor or health center should be made until the sixth month, then the mother should go at least every two weeks so that the doctor can watch (1) any change in blood pressure; (2) gain in weight; (3) condition of the kidneys (by testing the urine); and (4) the general health.

Personal Hygiene.—Personal hygiene—the care of the body—is most important. A woman should have good habits of eating, sleeping, bathing, and exercising, and of elimination, which means getting rid of the body's waste products.

Food.—Three regular meals a day should be eaten. They should be carefully chosen, and should include one quart of milk, a leafy vegetable, a root vegetable such as potato, fresh fruit, cereals and bread, and an egg, meat, or fish. Once a day is often enough to eat meat. After the sixth month, sufficient growth foods—milk, vegetables, and fruits—must be eaten, to cover the demands of the developing baby. Overeating, specially of fuel foods—starch, sugar, or fats—is harmful. It is not necessary to "eat for two" of these foods. Not more than one cup of coffee and one cup of tea a day should be taken.

Sleep.—"Early to bed" is a good habit. Windows should be open whenever the expectant mother sleeps—during daytime naps as well as at night. Frequent short rests may be necessary to prevent becoming overtired.

Exercise.—A woman who does her own housework gets good exercise, but she should also be out of doors for an hour or two each day. Heavy work or heavy lifting should be avoided.

Elimination of Waste Products.—The kidneys, the bowels, the skin, and the lungs get rid of the waste products for both the mother and the rapidly growing baby; therefore special attention should be paid to these organs during pregnancy.

Kidneys.—At least 1½ quarts (6 to 8 glasses) of water should be taken daily to flush the kidneys properly. The urine should be examined regularly once a month until the seventh month and weekly thereafter.

Bowels.—A daily bowel movement is necessary. Coarse breads, fresh vegetables, and fresh or dried fruits help to prevent constipation.

Skin.—A warm soap-and-water bath at least three times a week upon retiring is necessary to keep the skin in good condition.

Lungs.—The lungs supply oxygen for the mother and for the baby, too, and they also give off waste, so that plenty of fresh air is absolutely necessary.

Teeth.—A mother's general health depends upon good sound teeth; therefore the teeth need a dentist's examination as early in pregnancy as possible. The teeth should be brushed twice a day, especially at night before going to bed.

There need be no truth in the old saying "For every child a tooth" if the food is right and all necessary dental work is done.

The kind of teeth the baby develops depends upon the mother's health and diet.

Care of Breasts.—During the last two or three months of pregnancy the nipples should be washed daily with soap and water.

Weight.—The medical attendant will watch gain in weight. A rapid increase is not desirable and must be regulated by proper diet and exercise.

Clothing.—All clothing should be loose and hung from the shoulders. Corsets should never be tightly laced. Maternity corsets will be found a support and comfort during the later months of pregnancy. Round garters or bands should not be used. Low-heeled shoes should be worn.

Mental Hygiene.—General bodily health is affected by worry and mental strain, and therefore the expectant mother who is building the foundation of her baby's health upon her own should be serene, happy, and cheerful. There is no scientific truth in the belief that a mother can "mark" the baby. Excitement and special causes for anxiety are to be avoided because they disturb general health. A prospective mother needs to foster her strength and energy, not to waste it. She should play as well as work. Above all, for her peace of mind she should obey her doctor's orders and disregard what her neighbors tell her.

One of the few wise recommendations of the League of Nations regards childbirth. Women employed in industry are allowed to quit work six weeks before the birth of a child and remain away six weeks afterward, with pay and free medical attention.

We regret social conditions that render this governmental paternalism necessary; but since these conditions are forced upon us, it is well that the government insures what private initiative disregarded.

The agreement has become law in Germany.

The Mother's Food.—The nine months before a baby is born is the most neglected period of his existence. The pregnant woman is likely to leave her diet largely to chance or the whims of appetite, although she may be most careful of her food during the nursing period. Wrong feeding may be disastrous. It is not safe for the mother merely to eat "what she is accustomed to" or "plenty of good, nourishing food." The pregnant as well as the nursing mother should find out from a physician how much of certain essential foods she must eat daily.

Essential differences in her diet.—The food needs during pregnancy and the nursing period differ from those of any other time. The mother's food must maintain and repair her body and furnish fuel for warmth and work, and also provide for the growth of her baby and for maintaining his body temperature, muscular activities, and body fat. Many of us eat too much, but few mothers get enough of the vitamin and mineral foods needed for health, growth, and the normal regulation of body processes.

Simple, easily digested, and, in general, laxative foods should be chosen. Four or five small meals may be better than three large ones. Eating too much, hurriedly, or irregularly is harmful. A hygienic, happy life, with plenty of outdoor sunshine, enables the mother to use her food efficiently.

What constructive feeding does.—When the mother has been properly fed, the baby has a better chance of being born a fine, healthy child, vigorous, and resistant to disease. The mother will be able to furnish milk for him and will have strength to give him the right loving care. Her general health should be improved by pregnancy.

Why neglect the start?

What builds the baby?—During the pregnant and nursing periods all women should have an abundance of "the protective foods"—milk, eggs, green leafy vegetables, and fruit. These essential growth foods, which safeguard the bones and teeth, brain and muscles of the baby, can be increased in the diet without necessarily increasing the total amount of food taken daily.

The daily dietary essentials for growth:

(These foods give the first 1,000 calories)
One quart of milk.
One raw-vegetable salad.
One egg.
One citrous fruit, or tomato.
One cooked green leafy vegetable.
One serving of *whole-grain* cereal or bread.

If a helping of lean meat or fish, and potato and three slices of bread and butter are added to these foods, the diet will be sufficient in calories or fuel value and adequate in the growth essentials for the average pregnant or nursing mother.

Value of milk for mothers.—Milk is superior to any other single food in adequacy of protein, abundance of lime and variety of other minerals, and richness in vitamins. Milk is as much needed to build the baby during pregnancy as to promote breast milk.

The use of milk in cooking cereals, soups, white sauce, custards, puddings, and cocoa helps to put the desired quart in the daily food. Skim milk, buttermilk, or cottage cheese may be substituted for whole milk, if butter or cream is used. When a good supply of fresh milk is not available milk powder or evaporated milk may be taken.

Milk is the best body builder.

A sample day's menu for the average pregnant woman:

BREAKFAST

RAW FRUIT: One-half grapefruit or whole orange.
CEREAL: Oatmeal, or any whole-grain cereal, with whole milk and sugar.
BREAD AND BUTTER: One slice of whole-wheat or graham toast with 1 pat of butter.
MILK: One cup of cocoa made with whole milk.

10 A. M. LUNCHEON

MILK: One glass of whole milk, with or without egg.

DINNER

MEAT, FISH, OR EGG: Two beef balls, or scrambled eggs.
POTATO: Baked potato with 1 pat of butter.
GREEN VEGETABLE: Creamed spinach.
BREAD AND BUTTER: One slice of whole-wheat or graham bread with 1 pat of butter.
DESSERT: Baked custard made with whole milk.

SUPPER OR LUNCHEON

SOUP OR OTHER HOT DISH (MADE WITH WHOLE MILK): Creamed pea soup, or macaroni or rice and cheese.
SALAD: Raw-vegetable and nut salad on lettuce with mayonnaise dressing.
BREAD AND BUTTER: Two date bran muffins with 1½ pats of butter.
COOKED FRUIT: Baked apple with whole milk.

[THE "DIETARY ESSENTIALS" AND 2,000 CALORIES MORE]

Meat, Fish, or Egg.—In pregnancy eating meat more than once a day may be injurious to health. The physician may advise cutting meat out of the diet; if so, an egg dish may be substituted. Beef, mutton, lamb, poultry, and fish are more digestible than pork.

Overeating is dangerous in pregnancy, and it will not increase nor even help maintain the milk supply. The average woman of normal weight should not gain more than 20 pounds during pregnancy; the overweight woman may be better for gaining less or not at all.

Nutrition is a big problem of pregnancy.

Minerals and vitamins build the bones.—Mineral salts and vitamins of milk, eggs, vegetables, fruits, and whole grains build bones and teeth. Outdoor sunshine is necessary for the best growth, and the mother's sunning herself in the open air daily helps to prevent rickets in the baby.

When are teeth formed?—Man has 52 teeth altogether, and they begin to form by the third month of prenatal life. All the first set of 20 teeth are inside the jaw at birth, and their crowns are almost completely calcified. By the time the first tooth appears, the enamel is all formed on the temporary set. Practically all the teeth are begun during the 18 months when the mother is the main source of food for her baby. Good teeth protected by well-formed jaws depend on the abundance of calcium (or lime), phosphorus, and vitamins in the mother's food. Milk is the great lime food.

A diet otherwise good may lack iodine.—The thyroid gland, which is necessary for normal growth and health, must have a small amount of iodine. If this is not provided the thyroid enlarges and forms a goiter.

In certain regions, especially around the Great Lakes and in the Northwest, the water and soil have lost their iodine, so that foods grown in these localities may not provide the necessary iodine. At least in these regions, throughout pregnancy, iodine should be given to prevent goiter in the baby as well as in the mother. Iodine should be taken only in minute amounts, usually in 10-milligram tablets (about one-sixth of a grain) once a week, or as iodized table salt. If possible its use should be directed by a physician.

The mother must protect two.

A sample day's menu for the undernourished or hardworking pregnant woman:

BREAKFAST

RAW FRUIT: One-half grapefruit or whole orange.
CEREAL: Oatmeal, or any whole-grain cereal, with whole milk and sugar.
BREAD AND BUTTER: Two slices of whole-wheat or graham toast with 2 pats of butter.
MILK: One cup of cocoa made with whole milk.

10 A. M. LUNCHEON

MILK: One glass of whole milk, with or without egg.

DINNER

MEAT, FISH, OR EGGS: The most nourishing and digestible viands are chicken, lamb, lambs' kidneys, calf's liver, tripe, sweetbreads, brains, and tender broiled steak, roast or boiled beef. Avoid veal and pork.
POTATOES: Two baked potatoes with 2 pats of butter.
GREEN VEGETABLE: Creamed spinach.
BREAD AND BUTTER: Two slices of whole-wheat or graham bread with 1 pat of butter.
DESSERT: Baked custard made with whole milk.
TEA OR COFFEE: One cup of tea or coffee with cream and sugar.

AFTERNOON LUNCHEON

FRUIT OR MILK: One raw apple or other fresh fruit, or glass of milk.

SUPPER OR LUNCHEON

SOUP OR OTHER HOT DISH (MADE WITH WHOLE MILK): Creamed pea soup, or rice and cheese.
SALAD: Raw-vegetable and nut salad on lettuce with mayonnaise dressing.
BREAD AND BUTTER: Two date bran muffins with 2 pats of butter.
COOKED FRUIT: Baked apple with top milk or cream.

[THE "DIETARY ESSENTIALS" AND 3,000 CALORIES MORE]

The average nursing mother doing her own work requires a diet equivalent to that of the undernourished pregnant woman.

Whole-Grain Foods.—Breads and cereals should be made of *whole* grain because of its high mineral and vitamin content. Whole wheat, oats, corn, and other grains can be obtained in flour or cereal form. Cereals may be used for breakfast foods and in mush, muffins, puddings, and soup. Butter or cream served on food adds greatly to the vitamin as well as the fuel value of the diet.

A sample day's menu for the overweight pregnant woman:

BREAKFAST

RAW FRUIT: One-half grapefruit or whole orange.
BREAD AND BUTTER: One slice of whole-wheat or graham toast with 1 pat of butter.
MILK: One cup of cocoa made with whole milk.

10 A. M. LUNCHEON

MILK: One glass of whole milk.

DINNER

MEAT, FISH, OR EGG: One beef ball, or small serving of fish.
GREEN VEGETABLE: Creamed spinach.
BREAD AND BUTTER: One slice of whole-wheat or graham bread with 1 pat of butter.
DESSERT: Baked custard made with whole milk.

SUPPER OR LUNCHEON

SALAD: Raw-vegetable and nut salad on lettuce.
BREAD AND BUTTER: Two date bran muffins with one-half pat of butter.
COOKED FRUIT: Baked apple with whole milk.
MILK: One glass of whole milk.

Fruits and Vegetables.—The green leafy vegetables such as spinach, chard, lettuce, endive, cress, cabbage, kale, cauliflower, Brussels sprouts, string beans, dandelion greens, turnip tops, and beet tops have a value in the diet far greater than tubers, such as potatoes, or root vegetables, such as carrots, or legumes, such as peas and beans. The leafy vegetables, and fruit, either fresh or dried, should be used freely by every mother. They are not fattening. The overweight woman should reduce her use of sugar, potato, bread, and cereal.

Plenty of fruit and vegetables, with the help of whole-grain breads and cereals, makes the diet laxative.

How far can a mother protect her baby?—The mother stands between her baby and nutritional disaster. During pregnancy and the nursing period the material to build the baby comes either from the mother's food or from the stores she has accumulated in her own body. In case of food shortage the mother suffers first. If necessary she pays for the health of her child with her own flesh and blood and teeth. A comment upon the inadequacy of the feeding of mothers in the past is the adage, "For every child a tooth." Fortunately, with the right food and dental supervision this need no longer be true.

Adequate food the real safety factor.—A woman may live in fair health on a diet upon which she can not properly nourish a baby either before or after birth. But even with a properly balanced diet her ability to supply the right sort of material for the baby's growth has a limit. Her power to do this successfully depends on:

1. Her general health and state of nutrition before conception.
2. The amount, kind, and adequacy of her food. If her food can not supply the child's needs her body must.
3. The length of time she supports the growth of the child, both before and after birth. This is often at least 18 months.

Inadequate feeding during pregnancy or the nursing period may lead to the physical depletion of the mother or prevent the normal growth of the baby.

To restore birth to its right as a physiologic process we can only make an imperfect beginning, since the race has deteriorated. In other words, we must start with the children of a deteriorated race. The children, in the main, share the deterioration.

The first post-natal eugenic improvement would be breast-feeding. The healthier the child in infancy, the healthier the child in childhood, the healthier the girl in girlhood, and the healthier the adult woman, the healthier will be her progeny. Hence to better the race we must begin at the beginning and adjust the scale all the way. Babes must be fed at the breasts; children must get back to nature: our child-raising is too cramped, too artificial. Clothing, food, habits are incorrect. Children should "rough it". The six months baby should flounder around on the floor scantily and loosely clad. Let him wriggle on his stomach on a clean rug, quilt, or any piece of cloth, canvas or matting. Let him push himself about by his elbows and knees, crawl, walk, tumble, cry, and thus develop his muscles.

Many of our girls grow up with flabby muscles and misplaced organs: it is estimated that 20 per cent. of them are barren.

"The woman who grew up as a tomboy; who wore loose clothing and romped around in absolute freedom during her girlhood; who was kept away from the company of men and boys during her menstrual periods, and who was taught to take care of her health, will have nothing to fear when she reaches womanhood and is called upon to take up the duties of a wife and mother. But the woman who as a girl dreamed her days away, strapped in a straight-jacket corset; who knew nothing of the sexual instinct other than the thrill she felt when being caressed by her many admirers, must pay the penalty when she faces the problems of married life. It is from the latter class that we receive the majority of our patients who come for relief from physical suffering, and the mental sorrow of childless life. There can be no greater sorrow than that of the childless woman who must always feel that she has cheated her husband; that she has failed to do her part in the great drama of life. Should the barren home be due to the fault of the husband, and the fault be due to his own evil acts, a realization of this fact should prove to him a never ending punishment.

"The physical culturists are doing a noble work in directing the attention of women of leisure to the great benefits that come from systematic and free exercises. While I do not endorse all the claims made by them, I am sure that their exercises are productive of much good, and those who follow their instructions will have less physical suffering to endure in life than will those who do not. There is, however, a vast difference between exercise as generally understood by the laity, and proper exercise. Chopping wood is exercise but it only develops a part of the muscles, while a systematic course of training in physical culture will develop the muscles of the entire body. These exercises must be properly graded and not carried to excess. Many cases of malpositions of the uterus may be traced to indiscretion in exhausting exercise, as prolonged dancing, running, jumping the rope, long walks, climbing high flights of stairs, standing on the feet for long periods of time, and attempts at lifting heavy weights.

"Shop girls, teachers, and others whose duties require that they be upon their feet for long periods are frequent sufferers from diseases of the generative organs.

"Girls should not be in the company of men other than those of their own household, and should not attend school or practice music during the menstrual period. The co-educational school is one of the greatest evils we have in this country. It brings girls into contact with young men at a time when they are sexually exited. Every woman should have rest during the period, and girls who are employed in offices and stores where they work with men, should remain at home and rest during the time of their menses." —Dr. Frank P. Davis.

It has often been stated that 95 per cent. of pregnancies are normal. This is not true in our country. According to Williams of Johns Hopkins University, 6 per cent. of all his patients suffer abortion. He cites Mallins, who reports 19.23 per cent. of 2,000 pregnancies ending in abortion; and Franz of the Lying-in Hospital at Halle, who reports 15.4 per cent.

Dr. Bolt estimates that in private practice one-fifth or one-sixth of all pregnancies end in abortion. Taussig declares 25 per cent. of these to be criminally induced. His standard by which the crime is established is the law of the land and the general teaching of medical science. Judged by the true ethics of the right of the unborn child, the percentage of criminally induced abortions would mount.

Conditions are much worse in France, where birth control is the vogue. G. Rimette, in the statistics which he compiled of the Paris Maternite from 1897 to 1905, reports:

9875 pregnancies.
1437 abortions.
627 spontaneous abortions.
414 complicated abortions.
367 infected abortions.
27 maternal deaths from abortion.

This would give a percentage of about 21 per cent., to which if we add the still births the result is appalling.

Wappaus, for Europe, estimates the still births 3.79 per cent. of total births: for Prussia alone, for a period of 25 years, Rippin reports 3.69 per cent still births.

The infantile mortality of illegitimate children is always higher. Prescinding from the factor of criminal abortion and infanticide prevalent in these cases, the prenatal and postnatal conditions, as a rule, are against the infant.

The U. S. Census of 1928 records still births 3.9 against 100 live births for legitimate births, and 9 against 100 in illegitimate births.

A large number of still births are never reported.

An inquiry sent out by the Metropolitan Life Insurance Co. in 1919 to the health officers of all areas having good birth registration elicited the astounding evidence:

"1. More than five women die from disorders of pregnancy or childbirth out of each 1000 births registered. This is equivalent to one maternal death out of every 185 confinements.

"2. Forty-five babies out of every 1000 total births, or one out of every 22, are born dead.

"3. Forty babies out of every 1000 born alive die before they are one month old."

The infant mortality is greatest in the children of mothers under 20 years of age and of mothers over 40. Thus at New Bedford, Mass., in 1920, the infant mortality rate of infants of all mothers was 2.8 per cent.; of mothers under 20 years of age, it was 3.6 per cent.; of mothers over 40, 6.7. The birth-rate of mothers of these periods is lowest. The higher birth rate and lowest mortality are found in children of mothers from 22 to 35 years of age. This is the ideal age for motherhood.

Infant mortality is higher in the cities than in rural districts; higher among the working class than among the middle class; higher among the middle class than among the wealthy; higher among mechanics, shopkeepers, and unskilled workmen than among husbandmen; higher among negroes than among whites.

"It has been often said that the most dangerous occupation in the world is that of being a baby." (Dr. Bolt)

Ignorance and poverty greatly increase the maternal and infant mortality.

The mortality of institutional infants has always been high. More care is now bestowed upon this problem, and the results are gratifying.

All women who conceive a baby should bring it alive into the world, and should nurse it at their breast, if they are able. This principle yields to no economic necessity or social exigency. The illegitimate mother as well as "honest madam" is bound by this law. The pregnant woman placed in an institution, to save her reputation should give suck to her infant during several months. Provision may be made to save her reputation during this period of lactation as well as during her pregnancy. In Sweden the Allmaenna Barnhuset or Public Orphanage, founded about 1760, insures breast feeding for four months after birth by the mother in the institution. She also nurses another motherless babe.

This additional nursing should only be exacted of mothers who have abundant breast-milk.

After weaning, the babe would thrive better in a good foster home; but a good foster home is hard to find. Not more than two babies should be placed in any foster home, and no child should ever be placed with a mercenary, who works only for pay and has no further care of the child. A well managed institution is better than an ignorant home, or a poorly equipped home, or a mercenary home.

From Wassermann tests operated by Williams at Johns Hopkins University and by Jeans at Washington University at St. Louis, and by Vedder in examination of U. S. Army recruits, and from additional data published by Whitridge in Bulletin XXXI, No. 351, (May, 1920) of Johns Hopkins Hospital the following conclusions are drawn by Jeans:

"1. From 10 to 20 per cent. of adult males and about 10 per cent. of married women are syphilitic: a minimum of 10 per cent. of marriages involves a syphilitic individual.

"2. Seventy-five per cent. of all offspring in a syphilitic family are infected.

"3. In a syphilitic family 30 per cent. of the pregnancies terminate in death at or before term, a waste three times greater than is found in non-syphilitic families.

"4. Thirty per cent. of all the living births in a syphilitic family die in infancy as compared to a normal rate of 15 per cent. in the same class.

"5. Probably 25 to 30 per cent. of clinically syphilitic infants die, as a result of syphilis.

"6. But 17 per cent. of all the pregnancies in syphilitic families result in living non-syphilitic children, who survive the period of infancy.

"7. About 5 per cent. of our infant population is syphilitic.

"8. According to St. Louis vital statistics 3.5 per cent. of all infant deaths are ascribed to lues (syphilis)."

Other infantile diseases of high mortality are tuberculosis, diphtheria, whooping-cough, measles, and scarlet fever. The three latter are acute communicable diseases.

Tuberculosis is an insidious infection which is readily revealed by the Von Pirquet cuti-reaction. It is now generally believed that tuberculosis should not properly be classed as hereditary: congenital tuberculosis is rare. Direct contact with tuberculosis adults is the chief mode of infection in infancy: second to this is infection from impure milk. Tuberculosis is less liable from infection in infancy, gradually increasing with every year of life. When contracted in infancy it develops rapidly into an active form: the mortality is high. Kissing on the mouth is a leading mode of infection.

From this survey it is evident that the priest counselor, by teaching, and by proper welfare activity, can do much to abate these fearful evils. His pastoral zeal shall be much aided by a sure comprehensive knowledge of the matter.

The neopagan principle of the permissive destruction of weak infants has its advocates. These materialists mistake the sacredness of human life.

The value of a human life is not measured by its brute strength. We may not apply the principles of stock raising to human genetics. Man has no jurisdiction over human life: in inflicting the death penalty, society is a delegate of God. Human life is in the hands of God; only God can foresee its future development and destiny. Survival based upon bodily vigor alone would make us a race of savages. Many weak, congenitally diseased, and malformed infants have well served humanity.

But in defense of child welfare for all children we need only one argument: God has reserved to himself to decree who shall live and who shall die. The Fifth Commandment obliges us to respect every human life, and every moment of every human life.

The argument put forward by the pagan eugenists such as Karl Pearson, E. C. Snow, Popense, and Johnson is that it is well to allow an early death, of infants who cannot long survive, or who, if "brought to adult life and reproduction, mean, in many cases, the dissemination of another strain of weak heredity, which natural selection would have cut off ruthlessly in the interests of race betterment".

If the destiny of the race were the same as that of cattle, then race betterment should proceed along the lines of selective stock breeding. Materialistic eugenics mistake the nature of man and human rights. From the moment of conception the foetus, irrespectively of his strength or weakness, is a human individual with all the human rights of an adult. To sacrifice such a human individual is murder, aggravated by the helplessness of the victim.

Neither may it be alleged that nature herself is endeavoring to eliminate these weaklings. Nature as a universal concept is an abstraction. To mean anything therefore by the aforesaid generalization we must declare that there be a law in the general course of created things which makes for the elimination of weak infants. This is manifestly false. Infants are born to rational beings, and the law of nature is that they receive the care which rational creatures are able to provide. The young of the human species are all weaker at birth than the young of irrational fauna, because they are lawful claimants of rational care. The physically handicapped is not the unfit. It is a shame for Christianity to adopt the brutal materialistic laws of Sparta. Brute force is not the controlling power in human life. The law that makes the weak, sick, final moments of the adult's life sacred makes sacred the faint, imperfect, beginning of life of the premature foetus, of the deficient embryo, and of the human monster. Nature fails in some of these cases; and in some cases man can not mend nature's defect; but his duty is clearly to save what he can. There is a Divinity within us which bears witness to this truth. In the great plan of God the need of the weak is permitted to offer a field for the development of the noble offices of love and mercy.

A distinct gain in the saving of infant life has been made in the decade from 1910 to 1920. Vital statistics are not complete. Only about 58 per cent. of our population have satisfactory registration laws. No uniform methods of registering still-births is in force. Many are not registered.

From incomplete statistics the infant mortality per 1000 live births for 519 cities for the lustrum from 1916 to 1920 was:

1916, 101.1; 1917, 98.1; 1918, 106.8; 1919, 89; 1920, 90.5.

Density of population increases it. It is higher in the hot season. In Utica, N. Y., in 1909, during the months of July and August the deaths of infants under one year per 1000 births were 278. Owing to the efficient operation of Utica's Baby Welfare Committee, organized in 1912, the infant mortality declined to 81 in 1920. In the United States, in 1900 the deaths of infants under one year of age made up 20.7 per cent. of the total number of deaths of all ages; in 1919 such infantile mortality rate was only 14.4 per cent.

1926 Infant Mortality.—The 8th annual report of infant mortality in this country recently made available by the American Child Health Ass'n covers 675 cities and reveals much interesting information. It shows that only 39 out of every 1000 babies born in Portland, Ore., die during the first year of life, while 160 out of each 1000 dies in Johnson City, Tenn. Figures for some of the cities whose infant mortality rate falls in between these rates follow: Seattle, 47; San Francisco, 50; New Haven, Conn., 54; St. Paul, Minn., and Cambridge, Mass., each 56; Kansas City, 65; Atlanta, Ga., 111; New Orleans, 121; East Chicago, Ill., 120; Petersburg, Va., 137; Charleston, S. C., 146; and Staunton, Va., 156. Cities of the Pacific coast show by far the lowest records. Among the states Oregon, Washington and California had the lowest rates.

The death rate of girl babies is one-fourth lower than for boy babies before the first birthday. This is said to be due to a difference in natal vitality. Health records of 23,000 babies within their first year studied by the U. S. Children's Bureau showed that breast-fed babies are stronger, and that mortality among exclusively artificially-fed babies is three or four times greater than among exclusively breast-fed babies. First-born babies were found to have a slightly higher mortality than second-born. The bureau says statistics indicate that over 180,000 infants under one year die in this country annually and that over 90,000 of these die during the first month.

In this regard we are in better status than many other countries. Australia, Denmark, Ireland, Holland, New Zealand, and Sweden have a lower infantile mortality rate than ours. In France the rate is 119 per 1000 births; in Germany, 154; in Italy, 166.1; in Japan, 170, in Spain, 155.5.

The mortality is greatest in the first hours after birth. It mounts again in the interval between the third and fifth month, diminishing slightly thence to the end of the year.

The American Child Health Association, New York City, published a report from 584 cities of more than 10,000 population, within thirty states and the District of Columbia. The number of infants who die during their first year of life, out of every thousand born ranges from 51 in the state of Washington to 117 in South Carolina. The average is 80 of every thousand.

Infant mortality has been reduced by certified milk, by better artificial feeding, welfare stations, infant hospitals, and other child health activities.

Not all movements ostensibly to promote these high purposes are adapted to their aim. The Sheppard-Towner Bill for the "Public Protection of Maternity and Infancy" became a federal statute in 1921. This bill mistakes the functions of government, and tries to regulate by statute issues that are not in its field. It is inquisitorial and wasteful of the public money. It will promote birth control. It is unnecessary,—a fad of sentimentalists.

They have planned better in England, where Sir Arthur Newsholme has organized clinics, dispensaries, municipal and voluntary organizations, providing medical and surgical advice and treatment to mothers and children up to five years. Our federal government was sufficiently represented in the work by its Children's Bureau of the United States Department of Labor.

Life begins not at birth but at conception. Hence closely associated with the question of neonatal deaths is the question of prenatal deaths. These are not generally included in statistics of infantile mortality. Dr. Richard Arthur Bolt of Johns Hopkins University estimates the number of foetuses who die before birth or in birth at 150 per 1000 conceptions. If these be added to the neonatal deaths we reach the appalling rate of 200 per 1000 conceptions.

No method has been or can be devised to duplicate the human mother's milk. There is in the mother's milk some lifegiving element which synthetic chemistry cannot discover or reproduce. Synthetic chemistry never makes a complete analysis: it cannot duplicate nature's processes. Therefore breast-fed babies have a much lower mortality than artificially-fed babies. They are also more robust, and lay a better foundation for a healthy physical development.

The following table is taken from Abt's Pediatrics:

THE COMPOSITION OF MILK FROM DIFFERENT MAMMALS.

Animal—	Specific gravity	Water	Case-in	Albumin	Total protein	Fat	Sugar	Ash	Total solids
Man	1.0298	87.50	0.80	1.21	2.01	3.74	6.37	0.30	12.42
Cow	1.0313	87.27	2.88	0.51	3.39	3.68	4.94	0.72	12.73
" colostrum	1.042	75.07	4.19	12.99	17.18	3.97	2.28	1.53	24.93
Ass	1.032	90.12	0.79	1.06	1.85	1.37	6.19	0.47	9.88
Sheep	1.0355	83.57	4.17	0.98	5.15	6.18	4.17	0.98	16.43
Goat	1.0305	86.88	2.87	0.89	3.76	4.07	4.64	0.85	13.12
Mare	1.0347	90.58	1.30	0.75	2.05	1.14	5.87	0.36	9.42
Reindeer	.....	67.00	8.30	1.50	9.80	17.00	2.80	1.50	33.00
Rabbit	1.047	69.50	.....	.....	12.00	13.50	2.00	2.50	30.50
Dolphin	.....	41.00	.....	.....	11.00	46.00	1.30	0.60	59.00
Sow	1.038	83.94	.....	.....	7.23	4.55	3.23	1.05	16.06
Bitch	1.035	75.44	.....	.....	11.17	9.57	3.09	0.73	24.56
Elephant	1.0313	79.30	.....	.....	2.51	9.10	8.59	0.50	20.70
Camel	1.042	86.57	.....	.....	4.00	3.07	5.59	0.77	13.43
Llama	1.034	86.55	.....	.....	5.05	7.51	4.44	0.75	17.75

Sucking promotes the supply of breast-milk. A partially emptied breast rapidly decreases its milk output: a poorly functioning breast regularly and completely functioning increases its milk supply. Pfaundler and

Fink report calves who were sucked by other calves so that, being under a year old, they gave a quart of normal milk per day. Virgins of the human-kind who for a considerable period put infants to their breasts secrete considerable quantities of milk. Even cases are recorded of males who, under the influence of breast-sucking have secreted milk. Breasts that have dried up after weaning of the baby will again give milk if the babe sucks.

Scientific investigations generally repudiate galactagogues. Proper hygiene and feeding of the mother are the best galactagogues.

Menstruation.—The return of menstruation is often wrongly considered a cause for weaning. Nearly half of all nursing mothers begin to menstruate again as early as the third month after childbirth. The average well baby shows no discomfort during this period, although he may not gain in weight for a few days. In a very few cases the baby may seem irritable, sleep fretfully, and have undigested stools. Usually if the baby is affected at all it is during the few days before menstruation rather than during the period of the flow. The baby should not be removed from the breast during menstruation, although it may be well to give him artificial feeding in addition, if the period of breast feeding is nearly over.

Nursing mothers vary greatly in the season of their *post-partum* menstruation. The third, fourth, or fifth month is usual. Some go to the ninth or tenth month. Unless the health suffers, the recurrence may be left to nature. Care for the general health, and menstruation shall take care of itself.

Pregnancy.—If the mother becomes pregnant she should wean the baby. It is too great a strain on the mother to nourish two lives besides her own, and the breast milk is likely to become too poor and scanty to nourish the baby properly.

From the investigations of Talbot and Morse it is proven that Potassium iodid, sodium salicylate, antipyrin, mercury, aspirin, calomel, arsenic, bromids, urotropin, alcohol, and salvarsan exist in the milk of the mother by whom they have been ingested. We know that cow's milk smacks of certain foods. Therefore the nursing mother should be careful not to take food or drink which may exert a deleterious influence on the sucking babe. Menstruation is not usually established during early lactation. Its recurrence has no important influence on the mother's milk. Pregnancy occurring during lactation will render the breast-milk poorer in quality and scantier, because nature is diverting the woman's powers to the processes of the life developing within her. A vigorous non-pregnant wet nurse may nurse two babes without exhaustion; but no woman can successfully nourish one child within her body and another at her breast. As a rule nature itself regulates this. Pregnancy rarely supervenes before weaning time.

Complemental feeding should not be undertaken until a proper period for the development of the breast-milk has been allowed. Usually on the third or fourth day the human mother's milk appears in normal quantity. The ordeal of birth is a severe strain on mother and child: both need rest. The infant will not starve during the first two or three days. Nature has equipped him for a period of non-nourishment. Some able pediatrists ad-

vise to place the child at the breast not at all on the first day, once on the second day, and increase by one feeding per day until the normal period be reached.

Many babes are overfed. An infant should not be nursed merely to soothe it. The regular periods of feeding should be maintained. Mothers who have insufficient breast-milk, should by all means at regular intervals give first what breast-milk they have and then complement it according to the needs of the infant.

Care of the Nursing Mother.—The first secretion of the breasts, called "colostrum," is a thick, yellowish fluid which is adapted to the first needs of the baby. It is important to put the baby to the breast at regular intervals, as this stimulates the production of true milk.

Colostrum changes gradually into true milk, which is thinner and bluer. Usually the milk flow is well established after a week.

As the child grows the amount of milk secreted gradually increases in response to his demands. At the beginning of a nursing some milk is in the breast, but most of it is actually formed during the act of nursing. The quantity which the baby obtains at a feeding depends largely on the vigor, strength, and persistence with which the infant sucks. Emptying the breast completely by regular nursing helps more than anything else to produce milk.

The amount and quality of milk produced depends not only upon the demands of the baby, but also on the diet and hygiene of the mother.

The length of the period during which the mother produces milk varies considerably. Women of certain races nurse their babies much longer than others; also, circumstances may lengthen or shorten this period. Many women can nurse their babies at least a year, but the average infant usually needs additional food after the sixth month, although if gaining satisfactorily this may not be necessary before the eighth or ninth month.

Diet.—While the mother is in bed she should have a light, nourishing, varied diet of not more than four meals in 24 hours. After the mother is out of bed she may then take her accustomed diet, provided it is sufficiently nutritious. A nursing mother needs an abundance of good, simple, nourishing food. It is usually best for her to take food only at meal times and to take nothing but water between meals. Eating between meals usually upsets the stomach and in the end the mother gets actually less nourishment than if she eats only four regular meals. The meals should be simple and well cooked, and at the end of each meal the mother should drink a large glass of milk. The fourth meal, at bedtime, should consist of milk or a bowl of corn meal or other gruel, or some other simple, easily digested food. One quart of milk in some form and one quart of water should be taken daily. One cup or coffee or tea a day at mealtime is allowable.

The mother may eat anything she can easily digest. The old-fashioned belief that nursing mothers can not take certain foods, such as acid fruits or vegetables, for fear of upsetting the baby, is no longer held. Occasionally a certain food may distress a particular baby. When this has been proved it should be eliminated from the mother's diet.

Bowels.—Constipation is very common in the case of the nursing mother and must be guarded against. The excessive use of cathartics may cause diarrhea in the baby. Every effort should be made to regulate the bowels through the food. Coarse vegetables and fruits, particularly figs and prunes, are helpful. Bran bread, bran muffins, or a tablespoonful of bran added to the morning cereal, will usually correct constipation. A glass of cold water the first thing in the morning often helps. Regularity of habits is most important, and a definite daily hour for the stool should be established.

Baths.—A daily bath is urgent during the nursing period, not only for cleanliness but to assist the action of the skin. The mother at this time perspires very freely and efforts should be made to keep the body free from odors of perspiration and stale milk. For the same reasons, frequent changes of linen are desirable.

Sleep.—Sufficient sleep is most necessary for the nursing mother. As soon as possible the baby should be given only one nursing between 6 p. m. and 6 a. m., so that the mother may have a long, unbroken sleep. At least eight hours' sleep at night and one hour's rest during the day are desirable for every nursing mother. A tired mother can not produce the proper food for her baby.

If the baby is not trained to sleep at night, or if he is fretful, it is better for someone else to sleep in the same room with him or to get up with him at night, in order to save the mother's strength. Even when the mother must take charge of the baby at night, the baby must always sleep in a bed by himself, and it is better, after the early weeks, for him to sleep in the next room.

It is rare that a newborn infant will not take the nipple, and the rare defect is easily remedied; but if the artificial feeding precedes the mother's nursing, the infant will suck languidly or not at all.

If residual milk remains in the breasts it should be expressed; otherwise the secretion will be unduly reduced. This milk may be sucked out by a proper person or pressed out by the fingers: the breast pump is not recommended.

There is nothing unethical or unaesthetic in the act of the husband who sucks this milk from the breasts of his own wife. It should be an office of love; and in fact should increase the man's love of the noble function of motherhood.

The mother's nipples should be cleansed often: flat or depressed nipples are drawn out to normal form by sucking. Cases of irremediable inverted nipples may be found; but rarely does this abnormality preclude nursing. Corsets and other clothing which press on the breasts should throughout all life be avoided.

A practical schedule for nursing is the following:

Six a. m., ten a. m., two p. m., six p. m., ten p. m., and once during the night if the evidence of hunger restlessness be present.

Where the breast-milk is normal the infant should be given in rotation one breast at a time. Thus each breast is in turn completely evacu-

ated and the secretion is promoted. Of course if one breast be not sufficient for the infant's need the other breast must be given. In this case alternate in giving the breasts.

Fig. 43 — Variously shaped breasts of primipara. (De Lee)

Fig. 44 — Variously shaped breasts of multipara. (De Lee)

Some advise to discontinue breast feeding when artificial feeding must be employed. This advice is pernicious. The two sources of food are in complete harmony. Most American mothers must employ mixed feeding. Insane, epileptic, and leprous mothers should nurse their infants under the supervision of an attendant.

A tuberculous mother, unless the disease be arrested, should not nurse the infant; also a severe case of nephritis might contraindicate breast-feeding. Syphilis in the child or in the mother is not a contraindication, unless the syphilis has come in since the child's birth. It is evident that a syphilitic child should not nurse anyone but its own mother.

From the standpoint of the mother, giving suck is contraindicated when her physical condition is really unequal to the task. Breast feeding should be discontinued during acute infectious diseases. But even here many leading pediatrists teach that proper aseptic care will prevent the transmission of these diseases. The milk does not in itself transmit these diseases. Theoretically this is true, but there is so much danger attendant on these diseases, and the mother is so weakened that it seems more advisable to remove the infant from the diseased mother. The benefit of the doubt must be given to breast-feeding.

Even when infantile malformations, such as cleft-palate, make sucking impossible, the mother's milk should be expressed and fed to the child.

"So different is breast-milk from any other food for the young infant that one may well think of the newborn baby as still vitally a part of its mother. Birth should change only the manner and substance, not the continuity, of maternal nourishment. The long period of helpless and immature infancy of the child as compared with the young of many other mammals, removes it only a little above that of the marsupials, such as the kangaroo and the opossum, whose offspring are born so undeveloped that they can not live independently of the mother, who transfers them at birth to the ventral pouch, in which their nourishment is changed from the placental to the mammary type. The new-born infant needs its mother's milk, or that of another mother, to insure its normal development, and even, except under favorable development, its very life. Babies can and have many times been reared by all of us without any mother's milk, and have shown no serious deviations from that normal development that regularly follows adequate breast-feeding; and yet so exceptional are these cases that they loom big in our memories. The younger the baby, the more necessary that at least a part of its food should be human milk. After a few months the need becomes increasingly less urgent, but even then, though life is not endangered, the baby, as a rule, will fail to present the peculiar bloom of health, and vigor, and activity that is inseparable from the breast-fed babe. Not that the artificial feeding of the young infant is so difficult that it is discouraging or depressing: on the contrary, it is one of the most grateful chapters in all medicine. . . . And yet the more fully one learns the fundamentals of the science, and the more nearly one masters the art of feeding babies artificially, the more one is impressed with the fact that to the young infant mother's milk is a true specific, and that during this early period, at least, all artificial feeding is a substitute that necessity alone imposes on us." (Dr. Joseph Brennemann in Abt's Pediatrics, p. 623.)

Any healthy human milk is equally good for the infant. If wet nurses could be provided, the problem would be solved. Milk is an essential in infancy, and the best of milk is human milk. Wet nurses can not

be generally provided: their cost is high, and the supply is not equal in an age in which the great majority of mothers can not nurse their infants during the first four or five months. In the latter part of the first year the infant is better able to support itself on cow's milk complemented by other selected foods.

The milk of every kind of mammal is adapted to its own young. Thus the calf has a stomach that rapidly adapts itself to digest large quantities of grass, hay, corn, etc. It can therefore digest the tough heavy curds of its mother's milk. The human mother's milk remains a liquid with soft flocculent coagulum in the baby's stomach, as his nature requires. Artificial feeding therefore must depend on the proper modification of non-human milk.

Synthetic chemistry can not make any non-human milk an equivalent of human milk. The great immanent law in nature has put some life-giving element in human milk which human science can not find.

As aforesaid, if the mother's milk undernourishes the baby, additional milk must be added and about the eighth or ninth month spoon food is also given with care not to overfeed. Some pediatrists begin spoon feeding in the fifth month. At that stage the infant is able to digest starch, and may be given farina, broths, vegetables mashed and run through a sieve. Orange juice remains throughout a valuable complemental food, prune juice is a good laxative.

Orange juice is easily digested by the weakest stomachs; its salts and mineral acids are an excellent mild laxative. Strained orange juice is an excellent complemental baby food. It is rich in vitamins, and counteracts scurvy and rickets.

The pregnant woman and the nursing mother should drink a generous portion of orange juice.

In case of rachitis the orange juice may profitably be irradiated.

Experiments in irradiation of orange juice have been conducted by Drs. Maslow, Shilling, and Kramer of Johns Hopkins Hospital.

The present experiments are of a preliminary nature and only serve to demonstrate that:

1. Antirachitic properties can be imparted to orange juice by irradiation with the mercury vapor quartz lamp.

2. After feeding of irradiated orange juice to rachitic rats healing may be demonstrated as early as five days and is almost complete at the end of fifteen days.

Thus far no practical proprietary synthetic infants' milk has been found. Many of the formulas for preparing infants' food are so loaded down with mathematics and so difficult to prepare that they are impractical. Therefore the simple method of diluting pure milk and adding sugar or other carbohydrate remains the practical method. Proprietary foods are in general more expensive and less beneficial than the plain use of cow's or goat's milk as aforesaid.

Two, three, or even five stools per day for the infant may be considered normal: vomiting especially immediately after feeding may also be considered normal. The return of food from the stomach of the infant is

easy. In fact it is a good method to hold the infant upright over the shoulder or very gently press its stomach after feeding to liberate the gas: mild vomiting will often accompany the belching. Excessive vomiting is pathologic. It may indicate pyloric stenosis, necessitating surgery.

Diarrhea is a common infantile malady. In such diarrhea the nurse should reduce or briefly discontinue milk feeding; substitute barley water. The diarrhea of an artificially fed baby will usually yield to breast-milk: obtain it if possible. Next to breast-milk is Eiweissmilch, which is a combination of finely divided curd of sweet milk that has been coagulated by rennin and of buttermilk. Also the dextrin-Maltose preparations are specially indicated in diarrhea. Pure buttermilk is a good baby food, and may be given in diarrheal conditions. It is the easiest digestible of artificial foods.

Cow's milk is constipating for an infant: a formed hard stool in the artificially fed baby is the usual effect: it requires treatment only in cases of difficult defecation. The baby should be induced to stool: there is much evil in the excessive use of cathartics. A good laxative is milk of magnesia: dosage, about two teaspoonfuls. Castoria has been found serviceable. Nujol may be given. In more obstinate cases a mild enema or a suppository is indicated.

It is well early to accustom even the breast-fed baby to take water from a bottle, so that when he reaches that stage when the bottle must come into requisition he will not turn from it.

There has not been found available in nature a milk chemically equivalent to human milk.

The best substitute is goat's, ass's or cow's milk diluted and sweetened.

Of course a healthy wet nurse would practically be equivalent to the own mother, but such provision is very difficult in this country.

During pregnancy the gland cells and the lymphatics of the breasts are engorged in preparation for the secretion of milk. This engorgement is intensified at the birth of the child. The breasts become hard, hot, sometimes causing considerable pain.

From eight to twelve hours after birth the infant may be put to the breast.

Of course we except cases where maternal lactation is impossible.

The first secretion furnished to the infant by the breasts is called *Colostrum*. It is a slightly yellowish, sticky fluid containing less casein (if any) than ordinary mother's milk, but it contains 15 per cent. of lactalbumin and lactoglobulin, with a large percentage of fat.

The colostrum is mildly laxative to the infant, and aids in the passage of the *meconium*. It exists in a diminishing quantity up to the fourth or fifth day.

During the colostrum period the infant should suck from ten or fifteen minutes every four hours. In this interval under the influence of the infant's sucking the regular secretion of the normal mother's milk is set up. Thenceforth for the first two weeks the infant sucks every three or four hours, and thereafter every three and one-half or four hours.

From four to five ounces is a normal amount at one nursing. If the mother's milk fails, or is insufficient in quantity or is tainted, artificial feeding must be substituted.

The period of lactation should extend to ten or twelve months. In the latter stage it must usually be supplemented by additional food. A good baby food may be made by diluting pure milk with barley water or oatmeal water with cane sugar or sugar of milk added. If the milk be properly certified it needs no boiling: in doubt of the purity of the milk carefully boil it. Schroeder experimented by a year's observation of hardy, newborn guinea pigs. He found that the mortality in breast-fed pigs was 14 per cent.; in those fed on boiled milk, 46 per cent.; in those fed on pasteurized milk, 53 per cent.; and in those fed on raw milk, 52 per cent. The evidence seems to be in favor of boiled milk. The whole of the milk should be used. Barley water, oatmeal water, and malt extract are wholesome ingredients.

If a newborn babe must be artificially fed, a proper food may be compounded of nine ounces of pure milk, twenty-four ounces of barley water, four teaspoonfuls of granulated sugar. From two to three ounces of this may be fed about every two and one-half hours. From the sixth to the twelfth week the milk and sugar contents may be increased: twelve ounces of milk; five teaspoonfuls of sugar. From the third to the sixth month again increase these contents: eighteen ounces of milk; six teaspoonfuls of sugar. Feed four to six ounces at three-hour intervals. Feeding after 10 P. M. should not be done unless the restlessness of the child clearly shows hunger.

Thereafter the milk content may be increased gradually up to thirty-eight ounces, twelve ounces of barley water, and six tablespoonfuls of sugar. Feed six to eight ounces.

If conditions make it necessary to use condensed milk the feeding intervals and rations are the same.

A belief has long existed that boiled milk be indigestible. In 1912 Janet S. Lane-Claypon of London, England, gave a "Report to the Local Government Board on the Available Data in Regard to the Value of Boiled Milk as a Food for Infants and Young Animals". It is an exhaustive report including all available experimental and clinical data by personal investigation of results in England and in Germany. Her final conclusion is in favor of boiled milk.

Human milk is better in the raw state as nature intended it; but cow's milk in any state is indigestible to the babe. In its boiled state it may be slightly constipating, resulting in a formed stool, but this is a natural result of artificial feeding. It is one of the inevitable bad results. On this question Morse and Talbot (Diseases of Nutrition and Infant Feeding, 1915) declare:

"The heating of milk unquestionably predisposes to constipation, but only to a slight extent. It is a far less common cause of constipation than is ordinarily supposed."

Brennemann declares that boiled milk is more digestible than raw milk.

But granting that it be somewhat more constipating, its advantages over raw milk outweigh this objection. A little milk of magnesia or strained orange juice will promote digestibility of the milk.

Boiling destroys the pathogenic organisms of the cow's milk: it is the only reliable available measure to accomplish this. Pasteurization would accomplish the same, but it is not available to the many. The ordinary home boiling of the milk is an easy process. The purest milk obtainable should be used, and this should be boiled. In Europe boiling is the accepted process. Boiled milk does not induce scurvy: orange juice is an excellent anti-scorbutic. The two protective vitamines of greatest importance are the antirachitic and the antiscorbutic. Orange juice is one of the best known antiscorbutic agents. Clinical trials made in California showed that feeding orange juice to school children compared favorably to milk feeding, given comparable groups.

Care should be exercised in procuring milk. The milk of stall-fed cows is often poor in vitamines. Also hens' eggs in winter are often thus deficient.

Condensed milk is not as good as natural milk. It is richer in sugar but deficient in proteins and fat. If it be used no sugar is to be added. It may be diluted with barley-water at birth in the proportion of four ounces of barley-water to a teaspoonful of milk. A vigorous child may demand more than the average allowance. When this condition obtains, the periodical ration may be carefully and gradually increased with care against overfeeding. As a general rule feeding during the night should be omitted. Weigh the child frequently.

For the first two or three days an ounce of water and the colostrum suffice. A few drops of cream may be added to the water if the child cries. If the flow of the own mother's milk be retarded the milk of another healthy woman should be substituted if possible. The infant drinks up bacilli if present in the nursing milk, but does not imbibe moral qualities.

A baby's food should always be blood-warm during the entire period of lactation. Nature demands that nothing colder than the mother's milk be given until the organs of the child be developed to the mastication stage. Warm water may be given, and should be given, between the nursings.

The so-called "sugar-teat" is an abomination: its twin sister is the nursing bottle.

A mother who can give suck to her baby and will not do it is unworthy of the name of woman. But in our country the percentage of mothers who are able to nurse their children is decreasing. Less than 25 per cent. of American mothers are able to nurse their babes for more than three months. It is a rare American mother who can nurse her baby for a year.

If the condition of the mother be healthy she should give what she can, supplementing it by artificial feeding as aforesaid.

"Blessings on the mother who has become round shouldered nursing her children. In most of the world's greatest pictures of the Madonna and Child, the mother is thus represented—stooping as to her shoulders. Wear

braces if you like, mother. But if you keep round shouldered, let the homage of all right thinking humankind be your compensation.

"And as to the relation in which maternal nursing stands to the welfare and the future of our race! The mother's organism is in the most intimate union with that of her infant. The normal exercise of the nursing function does indeed develop not only the infant normally, but as well the fortunate mother, and beneficently, emotionally, spiritually, intellectually—in every possible way that is natural and rational.

"And all this through the warmth and the close bodily contact, the caresses and the constant play of mother and child, the tiny hand creeping confidently about the mother's neck. Who can estimate the part played in the moulding of the child's character, to the infinite benefit of the individual and the race, by the sweetness of the mother's smile, which her infant's first visual impressions receive by the comfortableness, the endearingness, the cherishing expressed in the maternal countenance!

"And yet a few years ago, a physician stated before a medical society that nowadays 60 per cent. of mothers can not or think they can not, or are led to imagine by what they read or are told that they cannot, or just crassly will not, yield to the yearning of the infant, with no language but a cry, for the breast of the mother who bore it.

"Such a mother bewailed to a great physician—whose temperament was a bit lacking as to diplomacy—that it had pleased Providence to take her babe from her. He told her she had no right nor reason to lay the blame upon Providence. Providence had had nothing at all to do with the wretched business. It was not the Deity, but her own perversity, abetted by bad milk, that had killed her baby." (John B. Huber, A. M., M. D.)

Development of the foetus in utero.—The foetal growth is much more rapid in utero than at any other period of life. It is estimated that from the fifth month to term the foetus doubles its length five times and increases its weight more than 800 times. The eminent German physician, His *(Atlas der Anatomie Menschl. Embryonen,* Leipzig, 1828) divided the intrauterine life into three periods, ovular, first two weeks; embryonal, third, fourth, and fifth weeks; and foetal, thence to term. The egg in the ovular period is microscopic; normally it reaches the size of a pigeon's egg in the fifth week.

In the fifth week indications of eyes, ears, and nose appear. Little stumps of hands and feet appear, and the four heart cavities are formed. The embryo is curled so that the head and tail bending toward each other are only separated by the allantoic stalk.

In the ninth week the eyes, eyelids, ears, and nose are quite well formed, the bud-like stumps form the upper arm, forearm, and hand. The same process takes place in the lower extremities. The digits are still rudimentary. The tail-like process has disappeared. The liver is developing; the abdomen is not entirely closed; the allantois has evolved into the umbilicus, and the chorionic villi are fast forming the placenta. Rudimentary external genitalia appear, but the sex cannot be judged since the genitalia of both sexes are developed from identical organs, and the observable differentiation is a later development.

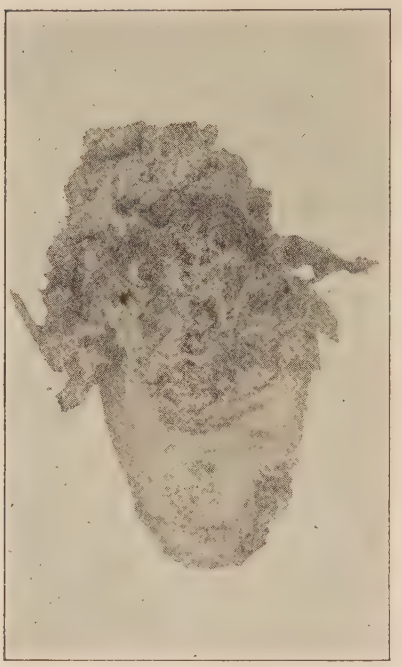


Fig. 45—Normal chorionic sac, containing embryo, showing chorion frondosum and chorion laeve. Obtained by accidental abortion—6 weeks. (From photograph by Madge Walsh)

Fig. 46—Embryo 3 to 4 weeks old. (Photo by Madge Walsh)

Fig. 47—Same as Fig. 46 showing membranes.

Fig. 48—Foetus of from 6 weeks to 2 months taken from myomatous uterus. Note yolk-sac and chorionic villi. (Photo by Madge Walsh)

Fig. 49—Foetus of about 8 weeks. (Photo by Madge Walsh)

Fig. 50—Foetus of about 10 weeks. (Photo by Madge Walsh)

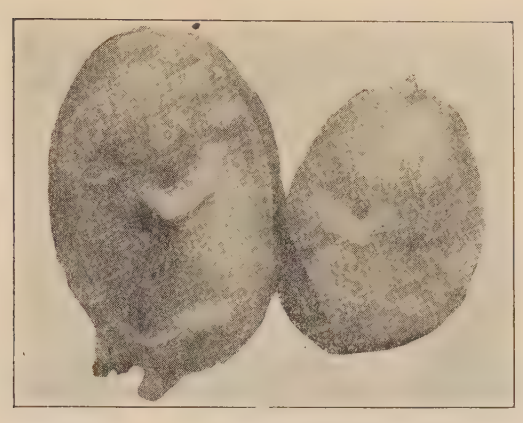


Fig. 51—Twin Foetus of from 10 to 11 weeks. (Photo by Madge Walsh)

In the thirteenth week the normal foetus is about the size of a goose-egg. The internal genitals are differentiated. Ossification is beginning; the foetus has the form of a human being with a proportionately very large head.

In the seventeenth week the normal foetus is about four or five inches long. It should not weigh less than three ounces. Fine downy hair, called lanugo, appears on the bright red transparent skin. Feeble fetal movements, quickening, are felt by the mother. The scrotum has closed and the external organs of sex may easily be differentiated. A dark-green fecal substance called meconium begins to accumulate in the large intestine. The meconium averages from 2½ to 3 ounces, and normally is not excreted until after birth. The colostrum of the mother's breasts has a laxative action: the infant's intestines are usually emptied of meconium by the third or fourth day.

In the twenty-first week the normal foetus has reached a length of between 7 and 9 inches; the average weight is from 7 to 9 ounces. Lanugo is present on the entire surface of the body save the palms of the hands and the soles of the feet. The eyelids are closed. The head is large: the nails may be distinguished. The head is about the size of a hen's egg. Such a foetus may be born alive, and live for a few minutes. It will usually struggle to breathe. No natural power can prolong its life beyond a few minutes.

In the twenty-fifth week the average foetus has a length of about a foot, and weighs 1¼ pounds. The body is now better proportioned, lean, covered with an unctious substance called *vernix caseosa*.

A foetus born in the twenty-fifth week of gestation may live for a few hours. But its digestive, assimilative, and respiratory organs are not sufficiently developed for extraplacental life. Oxygenation of the blood fails, and the foetus is starved. There are no well authenticated records of the rearing of such babies.

From the twenty-seventh week onward begins the period of possible extraplacental life. Preservation of the child in the early part of this

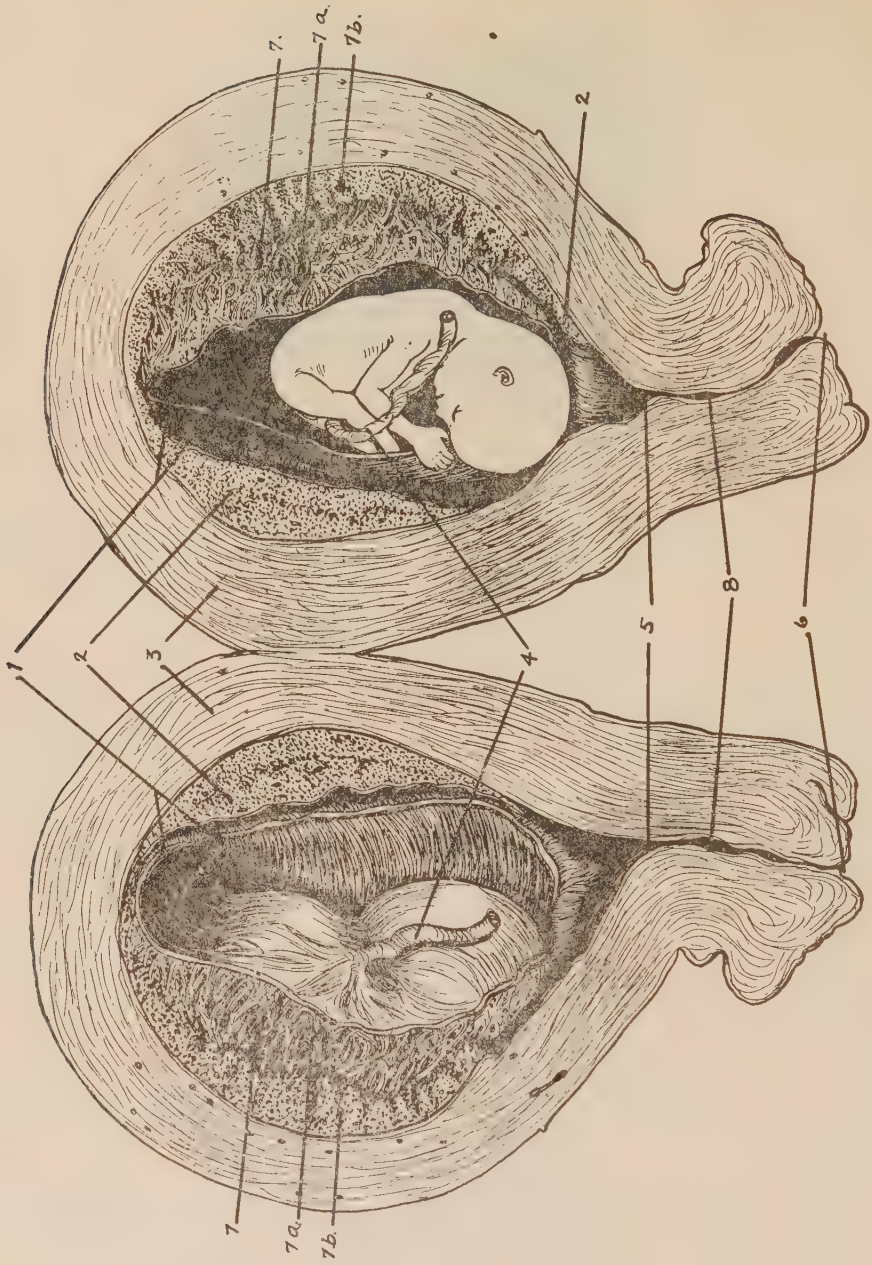


Fig. 52—UTERUS AT 12 WEEKS. (De Lee)

1. Fused amnion chorion laeve and decidua capsularis.
2. Decidua vera.
3. Muscularis uteri.
4. Umbilical cord.
5. Orificium internum uteri.
6. Orificium externum uteri.
7. Placenta.
7a. Chorion frondosum.
7b. Decidua basalis.
8. Canalis cervicis uteri.

period demands maternal milk, good nursing, and, if possible, an incubator. These early births have only a fighting chance. Most of them die. Survivors are apt to become hydrocephalic, dwarfed or paralytic. Of course they have the same right to life as has the normally born foetus. The laws of Sparta are not the laws of Christianity.

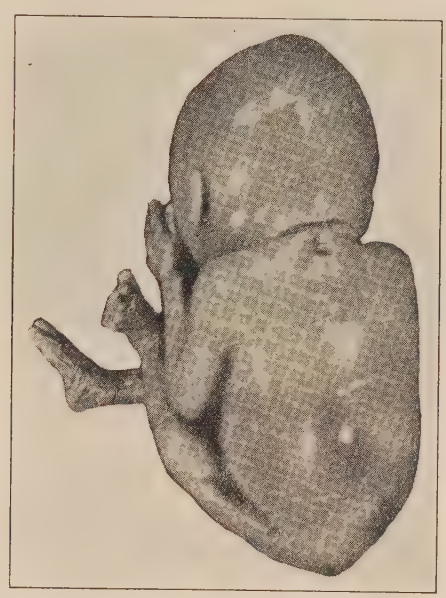


Fig. 53—Normal Foetus of 3 months. (Photo by Madge Walsh)

Fig. 54—Embryo of 3 months in amniotic sac, umbilical cord and placenta. (Photo by Madge Walsh)

Fig. 55—Foetus of 3 months in myomatous womb. (Photo by Madge Walsh)

Fig. 56—Embryo of 3 to 4 months—Note placenta. (Photo by Madge Walsh)

Fig. 57—Embryo of 4 to 5 months. (Photo by Madge Walsh)

In the twenty-ninth week the average length of the foetus is about fourteen inches, weight 2½ pounds. The skin is red and wrinkled. Because of undeveloped lungs the child born at this stage cries very feebly: seldom can it be kept alive.

In the thirty-third week the foetus reaches an average length of 16 inches and an average weight of from 3 to 4 pounds. The body is plump, red, covered with lanugo and vernix caseosa. The bones are soft and flexible; the testicles usually have descended into the scrotum. Though a baby born at this stage has not the probability of life of a full term baby, in favorable conditions it may live.

The thirty-seventh week inaugurates the full term period. Some foetuses are perfectly developed for extraplacental life at the end of this week — 259 days. However for the average birth 280 days constitute the ideal full term. There is some variation in different women and in different pregnancies of the same woman. There is no moral hindrance against acceleration of birth after the thirty-third week, provided that all operations directly contrary to the child's life be excluded; and provided that the life of the mother demand such acceleration. Delivery should not rashly be induced, as every day of healthy gestation up to full term better prepares the foetus for his new existence.

An average full term foetus measures between eighteen and twenty inches and weighs about 7½ pounds.

The lanugo has largely disappeared: vernix caseosa in the creases of the body: usually the testicles are in the scrotum and in girls the labia majora cover the labia minora: the fleshy red of the premature foetus has given place to a white or pale pink hue; the bones of the head are hard.

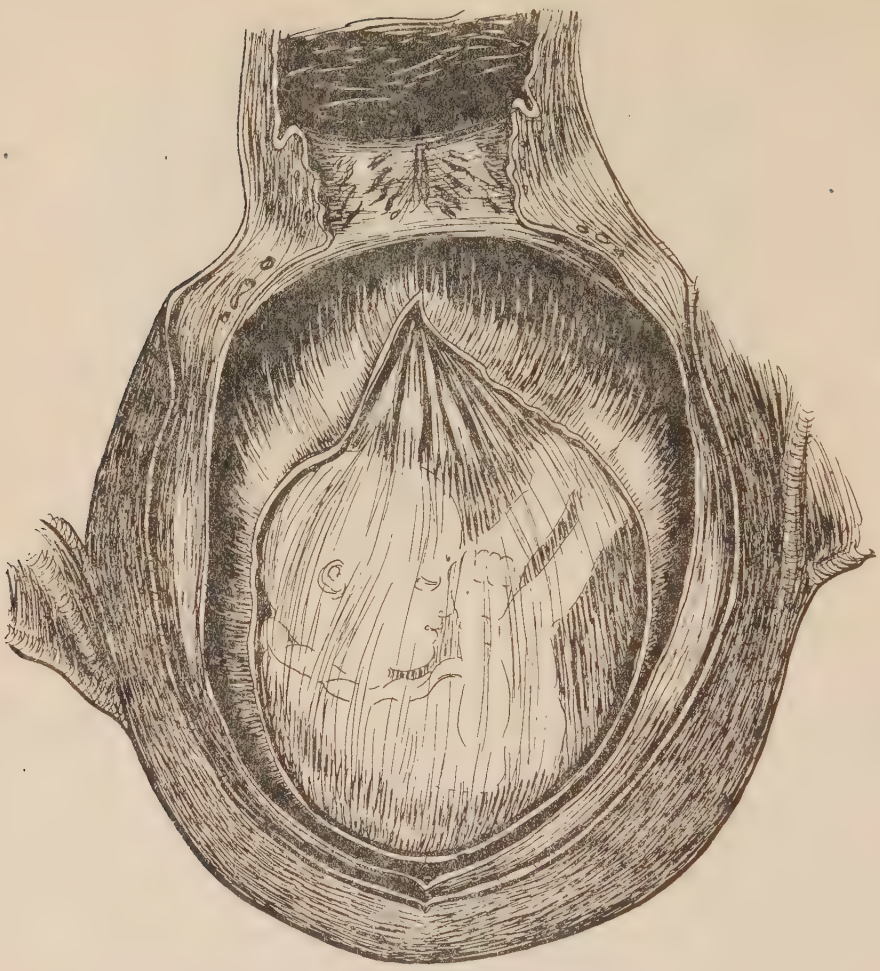


Fig. 58—Pregnant uterus at about six months. (De Lee)

the cranial sutures narrow, and ossification is developing in the various ossification centers. The head is about the size of the shoulders.

Of course there are great variations in all this data. Eight months' babies may in exceptional cases be well matured weighing eight pounds; while full term babies may be puny and undeveloped, weighing three pounds or less. The mother's general debility or prolonged sickness during pregnancy tends to produce a small poorly developed child. Large, healthy muscular women have large well developed babies. A narrow pelvis is a serious physical defect in any mother. Many of the evils of operative delivery originate in the narrow pelves.

Excessive labor, especially unsanitary labor, and undernourishment hinder the proper development of the foetus. During the latter months of pregnancy the expectant mother should be relieved of work, worry, and

Fig. 59—Foetus 6 to 7 months old. (Photo by Madge Walsh)

Fig. 60—Foetus of 8 months. (Photo by Madge Walsh)

want. It is a wise law which provides sanatoria during advanced pregnancy for women in industry.

The diet of a pregnant woman should be nutritious and easily digested. She needs not "eat by the book", but she should avoid articles of diet and modes of eating which good hygiene has proven unwholesome.

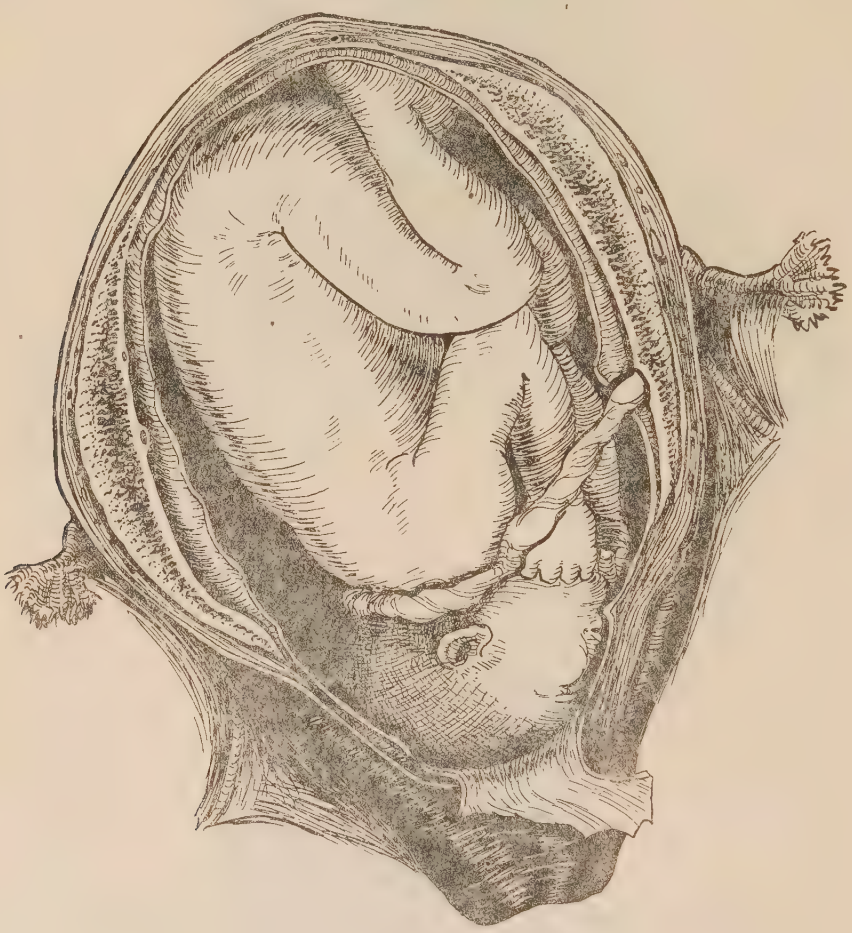


Fig. 61—Uterus near term. (De Lee)

Ludwig Prochownick (born 1851) for women of narrow pelves recommends a diet sufficiently furnished with proteins but low in carbohydrates and fluids. This diet is especially for the last eight weeks of pregnancy. The intent of the diet is to retard the growth and ossification of the foetus, so that it may readily pass through the narrow pelvis. Only about one pint of water daily is allowed: meat, fish and eggs are limited: soup, pastries, potatoes, sugar, and beer are forbidden. Prochownick's dietary has not well stood the test of experience: its unfavorable effects outweigh its good. There is some good advice in it. A simpler common sense diet

seems preferable. There is no need of a monotonous schedule of foods, but the diet should consist of plain nutritious, easily digested foods. Individual tastes should be pleased within the limits of a hygienic dietary. The food must furnish the pregnant woman good blood, and strength. Her blood supply must nourish herself and her baby. Fruit, vegetables, whole wheat bread, graham bread, rice, milk, buttermilk, pure water, and about four ounces daily of meat, fish, or eggs are recommended. The juice of oranges is very beneficial.

Fig. 62—Twin embryo of 8 months with common placenta, but different insertions of cords. (Photo by Madge Walsh)

A little decrease of food and liquids is advisable for fat women. Alcoholic liquors are pernicious. Coffee should be drunk sparingly, if at all. Strong tea is injurious. Starches, rich pastry, and fried fats are forbidden.

For normal women Prochownick's dietary or any other formula which reduces the bone salts of the foetus is pernicious. The woman loses strength, and the child is liable to rickets. But where the pelvis is very narrow or flat the aforesaid dietary may be well employed. It may be considered the less evil. A child born with retarded ossification is better than no child. In such cases after delivery the mother's diet is changed to foods rich in bone forming materials.

Fetal Respiration and Circulation. Before birth the foetal lungs do not function: in that stage foetal respiration is effected by means of the placenta. Foetal asphyxiation therefore can only have place through a derangement of the functions of the placenta. A pathologic condition of

the mother affects the unborn foetus through the placenta: it affects the sucking babe through the maternal milk. The placenta therefore performs for the unborn child the vital functions of respiration, assimilation, and excretion.

At birth the child must adapt its organs to its new mode of existence. In Caesarean section babies and many others there is some delay in the process of inspiration. In such cases artificial respiration is employed. The air passage must be cleared. The child is held up by the ankles, with the head resting on some flat surface. The mucus may thus be removed by the accoucheur's finger, wrapped in sterile gauze, from the mouth, throat and nasal passages. If foreign matter has deeply entered the lungs a tracheal catheter is the best means of extracting it. Every accoucheur's bag should contain a tracheal catheter. Sometimes it is necessary to remove the mucus from the air passages before the child is fully born.

When the respiration is still delayed the buttocks of the child may be spanked, the back vigorously rubbed, the tongue is gently drawn out and allowed to go back as rapidly as possible.

When these simple measures fail, authorities advise gentle compression and release of the chest about twenty times a minute, while the child is suspended by the ankles; insufflation with the tracheal catheter; and Schultze's swingings.

In the absence of a tracheal catheter, artificial respiration may be set up by a pulmotor or resuscitator, as the following news clipping shows:

"CLEVELAND, 1925—When their eighth child was born Mr. and Mrs. Henry Snyder, as on the seven previous occasions, were informed that he was dead.

"Remembering reading in a local newspaper of other children believed dead at birth but who had been made to live by a police resuscitator, Snyder called the police. After they worked over the boy with the machine for 30 minutes he began to cry.

"It was the eighth baby saved by the resuscitator here in two months."

Remarkable cases of resuscitation of seemingly dead infants by artificial respiration and by other agents are recorded. In January, 1928, a Firemen's Pulmotor Squad kept alive for forty-six hours the 13-days-old baby of Mr. and Mrs. Joseph Smith. Blood transfusions from the mother were administered. The baby died, but that is not an argument against the course of treatment. The fact that such a tiny spark of life was kept from extinction for that length of time shows what may be accomplished in a stronger organism.

The firemen used 55 tanks of oxygen.

In November, 1927, in the Long Island College Hospital, Brooklyn, N. Y., Raymond Siegfried, 22 months old, son of William Siegfried, after having been apparently dead for eight minutes was brought back to life by an injection of adrenalin into the heart.

In poorly furnished homes the priest may find occasion to "call the police."

Insufflation is difficult and somewhat dangerous. The operator fills his mouth with fresh air, then through the catheter gently forces this

mouthful of warm fresh air into the child's lungs. By compressing the child's chest the air is then expelled. The operator must keep his glottis closed, otherwise he would force into the child's lungs the impure air of the operator's lungs. In desperate cases a skilled operator may use oxygen instead of air, being careful not to use too much.

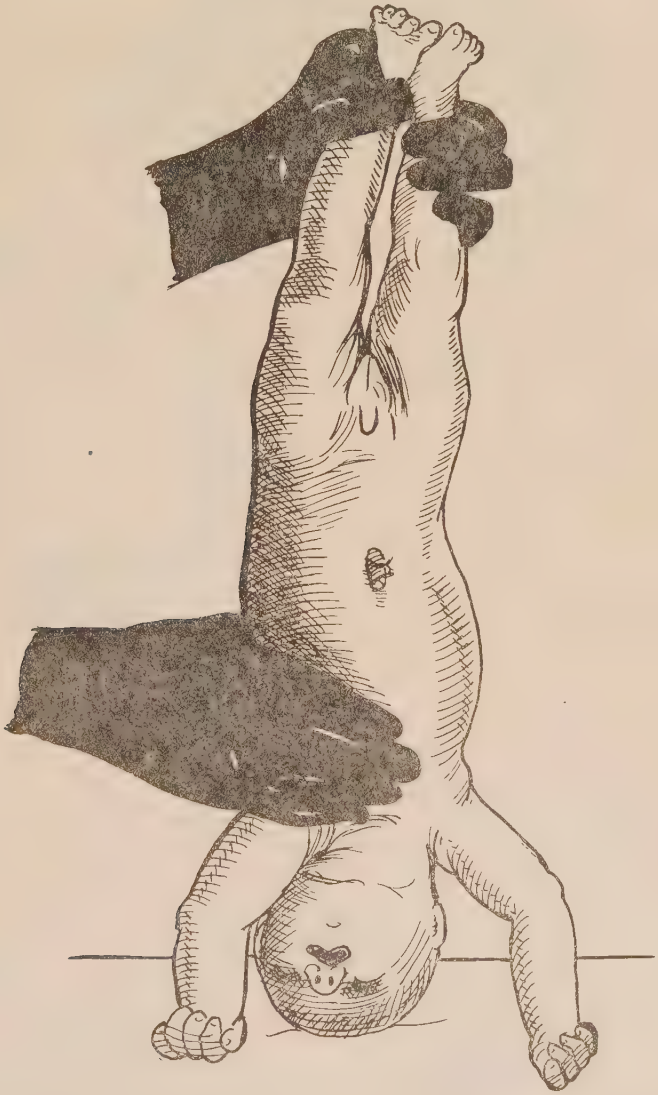


Fig. 63—Prochownick's Method of Resuscitation. (De Lee)

Schultze's swingings are extensively used in Wertheim's famous Clinic in Vienna. They are the most powerful means, and of course attended by danger. The child is grasped by the operator in such manner that the index fingers securely hold the child in the axillae. The operator's thumbs

Fig. 64—Mouth to Lung Insufflation with Tracheal Catheter. (De Lee)

rest upon the child's chest and the remaining three fingers lie upon the child's back. The operator's wrists steady the child's head. The child is gently swung up over the operator's head so that the child's feet fall backward downwards. The child is held suspended on high for a few seconds. Then the child is gently swung outwards downwards to the plane of the floor.

Close observation must accompany the swingings to note the heart beats and first indications of respiration. The swingings should cease as soon as respiration is established: the child should then be wrapped in a warm blanket and watched. The swingings range from one or two to six hundred. Rarely more than ten are necessary. If secondary asphyxia is developed the process is repeated, but the results are not favorable. The warm bath is a useful adjunct as it is a cardiac stimulant. In artificial respiration the pulmotor is not as good as the tracheal catheter.

In Schultze's swingings the child must be held securely; the swinging must be gentle not jerky; and the flexion of the spinal column must not take place in the thoracic region.

The foetal circulation is much different from adult circulation. In the unborn foetus the lungs do not purify the blood: the placenta is the lungs of the unborn child.

At birth there is an opening between the foetal heart's auricles which should gradually close. Failure of this foramen to close gives rise to cyanosis,—"blue babies". It may be fatal. No alarm needs be felt for a few months.

Sometimes the placenta becomes detached before the birth of the child. This causes asphyxia. The same fatal result is effected if the umbilical cord becomes compressed. Owing to its imperfect exercise of its activities, the unborn foetus needs much less oxygen than is consumed in lung breathing.

The unborn foetus is first nourished from the umbilical vesicle, which receives nutriment from the mother and supplies it to the foetus through the vitelline circulation set up by two omphalomesenteric arteries and two omphalomesenteric veins. It is a provisional means to serve while the chorionic villi are forming. In the first two weeks of pregnancy, the vitelline circulation is principal. The allantoic circulation is being established. The allantoic draws its nutritive and oxygenated blood from the villi. The vitelline and allantoic circulations exist side by side for a time, but after the fifth week the vitelline circulation is superseded by the allantois.

Accelerated births and congenitally weak infants are often saved by incubation. Toledo, Ohio, under Dr. Ray C. King, is taking a leading place in human incubation.

Within twelve hours after birth, each baby is taken through four distinct climatic changes, mechanically created, to acclimatize it to the outside world and properly start it on a healthful career. It is at least ten hours before the mother sees her baby after birth. And the important thing is that windows are closed tight to protect baby from the inclemencies of outside weather. Correct proportions of air, scientifically heated and humidified, are brought in by powerful ventilating fans to give baby made to order weather.

Mortality of newly born babies has been greatly reduced since the hospitals have learned to scientifically control the air and other weather conditions within the nurseries, according to Dr. Ray C. King, baby expert of two of Toledo's largest hospitals and nationally recognized as an authority on babies.

Immediately after birth the baby is placed in a bassinet or rubber-lined crib, which is electrically heated to a temperature of 90 degrees. The baby remains in this crib for an hour, after which it is washed with oil and clothed. It is then wrapt in blankets and placed on a heating table, where it remains for eight to ten hours. This table is heated to 80 degrees. The temperature of the room or nursery itself is maintained at 68 to 70 degrees at all times. Humidity is important and is held at 45 to 50 degrees relative.

Every baby loses weight within three or four days after birth, due to gradual dehydration or moisture loss. A ten- or eleven-pound baby will lose from a pound to a pound and a half by this process. The weight loss of a five-pound baby amounts usually to three or four ounces. That's why the air in the nursery should not be too dry. It is important, too, that the baby receive plenty of clean air without drafts or the dusts that blow in from the outside. The air should be filtered or washed. Air in the nurseries of many hospitals is completely changed every five minutes.

Hospitals some time since abandoned the small incubator idea of prematurely born babies. These hospitals now have a good-sized nursery with double and triple sets of doors and triple radiation for uniform heating. The temperature in these nurseries is maintained at 95 to 98 degrees in spite of the larger air space available. Thus, these babies have a chance to grow and develop as they should. Dr. King compares them to certain types of plants and flowers which require a specific climate condition to blossom at their best.

Both Dr. King and Dr. C. D. Selby, formerly president of the Ohio Medical Association, declare that the temperature and other air conditions in the operating rooms of hospitals are vitally important.

The best temperature for the operating room is 80 degrees. The windows are kept closed to prevent dirt and dusts from blowing in and the air is changed mechanically.

The foetal circulation before birth is different from that which nature sets up after birth. In the unborn foetus the lungs do not function: oxygenation of the blood is effected in the placenta. The allantois in the human embryo is not prominent: it soon merges into the umbilicus, which functions until birth. "During foetal life oxygenated placental blood enters the embryo by way of the large umbilical vein and is conveyed to the liver. There it mingles with the small amount of venous blood brought in by the portal vein. Thence it is carried to the interior vena cava either directly through the ductus venosus or indirectly through the liver sinusoids and hepatic vein. The impure blood of the inferior vena cava and portal vein affects but slightly the greater volume of pure placental blood. Entering the right atrium, it mingles somewhat with the venous blood returned through the superior vena cava. . . . This purer blood of the

left atrium enters the left ventricle, and is driven out through the aorta, to be distributed chiefly to the head and upper extremities.

"The venous blood of the superior vena cava, slightly mixed, is supposed to pass from the right atrium into the right ventricle, whence it passes out by the pulmonary artery. A small amount of this blood is conveyed to the lungs by the pulmonary arteries, but, as the fetal lungs do not function, most of it enters the dorsal aorta by way of the ductus arteriosus. Since the ductus is caudal to the origin of the subclavian and carotid arteries, its less pure blood is distributed to the trunk, viscera, and lower extremities. The placental circuit is completed by the hypogastric or umbilical cord.

"*Changes at birth.*—At birth the placental circulation ceases and the lungs become functional. The umbilical arteries and veins, no longer used, contract and their lumina are obliterated by the thickening of the inner coat (tunica intima). The lumen of the umbilical artery is said to be occluded after four days, that of the umbilical vein within a week. The cord-like vein is persistent as the ligamentum teres of the liver; the arteries become the obliterated hypogastrics.

"The ductus venosus atrophies, because after birth only the blood from the portal vein enters the liver, and this is all drained into the liver sinusoids, forming the portal circulation. The ductus venosus is obliterated within two months, and becomes the fibrous ligamentum venosum, embedded in the wall of the liver.

"The ductus arteriosus ceases to function after birth, as all the blood from the pulmonary arterial trunk is conveyed to the expanded lungs. In most cases the ductus becomes impervious within four months after birth and persists as a solid, fibrous cord, the ligamentum arteriosum.

"After birth, the large amount of blood now returned to the left atrium from the functional lungs equalizes the pressure in the two atria. As a result, both during diastole and systole, the septum primum or valve of the foramen ovale is pressed against the septum secundum, closing the foramen ovale. Eventually the two septa fuse,—in one-third of all cases within three months; in two-thirds, by the tenth year." (Prentiss-Arey)

The main statements in Prentiss' presentation are the accepted view of embryologists. There is some diversity of opinion on some minor points.

The foramen ovale is the foetal opening between the heart's auricles.

The ductus arteriosus is a channel in the foetus from the pulmonary artery to the aorta. It is called the ductus Botalli.

The ductus venosus is a foetal blood vessel connecting the umbilical vein with the ascending vena cava. It is also called the ductus Arantii.

The foramen ovale sometimes persists and gives rise to severe, often fatal heart disease. Such babies are bluish in appearance (cyanotic).

It is generally received by biologists that the umbilical vein contains oxygenated blood and the arteries venous blood. The fetal blood is oxygenated in the placenta. The conditions in which the foetus in utero lives enable it to tolerate a small supply of oxygen. The amount of oxygen needed increases with the fetal growth. If the placental circulation be shut off the foetus will die of asphyxiation.

The *Cell Theory* of modern Cytology is a widely accepted working hypothesis. In "The Inadequacy of the Cell Theory of Development" Whitman discredits the theory.

In his work "On the Inadequacy of the Cellular Theory of Development" Adam Sedgwick agrees with Whitman.

Several other scientists are of the opinion that the postulates of the cell theory are excessive. Thus as Bary declares:

"The plants build cells, but cells build not plants."

The cell theory may be briefly stated as follows:

All the higher, and the great majority of the lower, plants and animals are composed of a vast number of vital units or "cells." In the case of many microscopic forms, however, the entire organism, plant or animal, consists throughout life of a single cell. Familiar examples of these "unicellular" forms are Bacteria and Diatoms among the plants, and Foraminifera and Infusoria among the animals. In all cases, however, whether the cell-unit lives freely as a unicellular organism or forms an integral part of a multicellular individual, it exhibits in itself all the phenomena characteristic of living things. Each cell assimilates food material, whether this is obtained by its own activity, as in the majority of the protozoa, or is brought, as it were, to its own door by the blood stream, as in the higher Metazoa, and builds this food material into its own substance, a process accompanied by respiration and excretion and resulting in growth. Each cell exhibits in greater or less degree "irritability," or the power of responding to stimuli; and finally each cell, at some time in its life, is capable of reproduction. It is evident therefore that in the multicellular forms all the complex manifestations of life are but the outcome of the co-ordinated activities of the constituent cells. The latter are indeed, as Virchow has termed them, "vital units." It is therefore in these vital units that the explanation of vital phenomena must be sought. As Verworn said, "It is to the cell that the study of every bodily function sooner or later drives us. In the muscle cell lies the problem of the heart beat and that of the muscular contraction; in the gland cell reside the causes of secretion; in the epithelial cell, in the white blood corpuscle, lies the problem of the absorption of food, and the secrets of the mind are hidden in the ganglion cell." So also the problems of development and inheritance have shown themselves to be cell problems, while the study of disease has produced a "cellular pathology." The most important problems awaiting solution in biology are cell problems.

To make thought the product of cellular activity, is pure materialism. We may however consider the glandular structure of the organs which seem to be instruments of the thought processes of the soul of man.

The cell theory was first formulated in the 17th century through the study of plants. Robert Hooke, Marcello Malpighi, and Nathanael Grew were the pioneers.

The first definite formulation of the theory was made in 1830 by Jacob Schleiden. In 1839 Theodore Schwann applied the cell theory to animal tissues.

The finely granular substance of the cell-contents of plants by Hugo von Mohl (1846) was called protoplasm. Remak (1852) extended this term to the cell-contents.

General Morphology of the Cell.—In its simplest form the cell is a more or less spherical mass of viscid, translucent and granular protoplasm. In addition to the living protoplasm there is present in the cell food-material in various stages of assimilation, which usually presents the appearance of fine granules or spherules suspended in the more or less alveolar or reticular mesh-work of the living protoplasm. In addition there may be more or less obvious accumulations of waste material, pigment, oil drops, &c.—products of the cell's metabolic activity. All these relatively passive inclusions are distinguished from the living protoplasm by the term "metaplasm" (Hanstein), or "paraplasm" (Kupffer), although in practice no very sharp distinction can be drawn between them. The cell is frequently, but by no means always, bounded by a cell-wall of greater or less thickness. In plants this cell-wall consists of cellulose, a substance closely allied to starch; in animals only very rarely is this the case. Usually the cell-wall, when this is present, is a product of the cell's secretive activity; sometimes, however, it appears to be formed by an actual conversion of the surface layer of the protoplasm, and retains the power of growth by "intussusception" like the rest of the protoplasm. Even when a limiting membrane is present, however, evidence is steadily accumulating to show that the cell is not an isolated physiological unit, but that, in the vast majority of cases, there is a protoplasmic continuity between the cells of the organism. This continuity, which is effected by fine protoplasmic threads ("cell-bridges") piercing the cell-wall and bridging the intercellular spaces when these are present, is to be regarded as the morphological expression of the physiological interdependence of the various—often widely separated—tissues of the body. It is probable that it is the specialization of this primitive condition which has produced the cell-elements of the nervous system. In many cases the cell-connexions are so extensive as to obliterate cell-boundaries. A good example of such a "syncytial" tissue is provided by the heart muscle of Vertebrates and the intestinal musculature of Insects (Webber).

In all multicellular, and in the great majority of unicellular, organisms the protoplasm of the cell-unit is differentiated into two very distinct regions,—a more or less central region, the *nucleus*, and a peripheral region (usually much more extensive), the cell-body or *cytoplasm*. This universal morphological differentiation of the cell-protoplasm is accompanied by corresponding chemical differences, and is the expression of a physiological division of labour of fundamental importance. In some of the simpler unicellular organisms, *e.g. Tetramitus*, the differentiated protoplasm is not segregated. Such forms are said to have a "distributed" nucleus, and among the Protozoa correspond to Haeckel's "Protista." It is probable that among plants the Bacteria and Cyanophyceae have a similar distributed nucleus. In all the higher forms, however, the segregation is well marked, and a "nuclear membrane" separates the substance of the nucleus, or "karyoplasm" from the surrounding "cytoplasm." Within the nuclear

membrane the karyoplasm is differentiated into two very distinct portions, a clear fluid portion, the "karyolymph," and a firmer portion in the form of a coarser or finer "nuclear reticulum," and, embedded in the latter and often irregularly aggregated at its nodal points, a granular substance, the "chromatin," the latter being the essential constituent of the nucleus. In addition to the chromatin there may be present in the nucleus one or more, usually spherical, and as yet somewhat enigmatical bodies, the "nucleoli." In addition to the nucleus and cytoplasm, a third body, the "centrosome," has often been considered as a constant cell-structure. It is a minute granule, usually lying in the cytoplasm not far from the nucleus, and plays an important part in cell-division and fertilization.

Cell-differentiation.—Both among unicellular and multicellular individuals the cell assumes the most varied forms and performs the most diverse functions. In all cases, however, whether we examine the free-living shapeless and slowly creeping *Amoeba*, or the striped muscle cell or spermatozoon or the Metazoa, the constant recurrence of cytoplasm and nucleus show that we have to deal in each case with a cell. The variation in the form and structure of the cell is an expression of that universal economic law of nature, "division of labour," with its almost invariable accompanying "morphological differentiation"; the earliest and most fundamental example being in the differentiation of the cell-protoplasm into cytoplasm and nucleus.

It is a first principle of cytology that cells only arise from pre-existing cells. Virchow expressed this genetic continuity of cells by the since famous aphorism: *Omnis cellula e cellula.*

Outline of Cell-division.—There are two very distinct methods of cell-division. The more general and also more complicated method is accompanied by the formation of a complex fibrillar mechanism, and was on this account termed "mitosis" by W. Flemming (1882), and "karyokinesis" by W. Schleicher (1878). The other method, "amitosis," or direct division, is unaccompanied by any visible mechanism and is of relatively exceptional occurrence. In the more usual method of cell-division, or "mitosis," we can distinguish two distinct but parallel processes, the one undergone by the chromatin and resulting in the "chromatic figure," the other usually only concerning the cytoplasm and resulting in the "achromatic figure."

We will consider the chromatin changes first. The chromatin granules lose their scattered arrangement on the nuclear reticulum, and become instead arranged in a linear series to form a coiled and deeply staining "spireme thread." As the thread contracts, its granular origin becomes less evident, and at the same time the coils become fewer in number; the "close" spireme of earlier stages becomes the "loose" spireme of later stages. As the spireme thread contracts, it segments into a number of short, and usually U-shaped, segments—the "chromosones" (Waldeyer, 1888). The number of these chromosomes is always constant for the cells of any given species of plant or animal, but varies greatly in number in

different species. Thus in the parasitic worm *Ascaris megalocephala,* var. *univalens,* there are only two. In the crustacean *Artemia* Bauer found 168, while in the amphibian *Salamandra maculata,* as also in the lily, the number is 24. While these changes have been proceeding in the nucleus, changes in the cytoplasm have resulted in the formation of the achromatic figure. These cytoplasmic changes are initiated by the division into two of a minute body, the "centrosome," originally discovered by P. J. van Beneden in 1883, and usually lying not far from the nucleus. The daughter centrosomes separate from one another, travelling to opposite poles of the nucleus. At the same time radiations extend out into the cytoplasm from the centrosomes, and, as the nuclear membrane disappears, invade the nuclear area. Some of the fibrillae in the latter region become attached to the chromosomes and are termed "mantle fibres"; others become continuous from one centrosome to the other and constitute the "spindle fibres." The remaining radiations at the two poles of the spindle are the "astral rays." The chromosomes now arrange themselves in the "equatorial plate" of the spindle and each splits longitudinally into two. The sister chromosomes now pass to opposite poles of the spindle, and there, returning to the "resting" condition, constitute the daughter nuclei. Division of the cell follows, usually, in animals, by simple constriction. Both Theodor Boveri and van Beneden, in their papers of 1887, regarded the centrosome as initiating, not only the division of the cell-body but that of the chromatin also; Beneden even suggested that the pull of the mantle fibres caused the division of the chromatin in the equatorial plate. W. Pfitzner in 1882 was the first to show that the splitting of the chromosomes in the equatorial plate was only the reappearance of a split in the spireme thread and was due to a corresponding division into two of each of the chromatin granules. In the spermatogenic cells of *Ascaris,* A. Brauer has shown that the chromatin granules divide while still scattered over the nuclear reticulum and before either the formation of a spireme thread or the division of the centrosome. In many other cases the reverse of this condition occurs, the centrosome dividing long before there is any indication of division in the nucleus *(e.g.* salamander spermatogenic cells, Meves, &c.) We must therefore, with Boveri and Brauer, regard the division of the chromatin in mitosis as a distinct reproductive act on the part of the chromatin granules, the chromosomes being merely aggregates of these self-propagating units.

For convenience of description it is usual to recognize four periods in mitosis: (i.) Prophase, (ii.) Metaphase, (iii.) Anaphase, and (iv.) Telophase (Strasburger, 1884). The prophase covers all changes up to the completion of the mitotic figure. The metaphase is the parting of the sister chromosomes in the equatorial plate; their passage to opposite poles of the spindle constitutes the anaphase; and their reconstruction to form the resting daughter nuclei, the telophase.

A minute body detected at the spindle poles by Flemming and van Beneden was by Boveri called the centrosome. They considered it as the dynamic central permanent cell organ, which, like the nucleus, passed by division from one cell-generation to the next.

In the present state of cytology the most probable opinion is that the centrosome is not a constant nor permanent cell-structure.

In every species of life by mitosis the chromatin is resolved into a definite number of chromosomes. The number of chromosomes in the human cell is not determined. Estimates vary from 22 to 48. The number 24 is accepted by many. It is generally accepted that the chromosomes play a leading part in determining the specific characteristics of the organism.

In human life we must, of course, make this subject to the freedom of the will.

The chromatin in the cell-nucleus is exactly halved at every cell-division. By the vital energy inherent in the organism the chromatin increases its mass, so that its bulk remains constant from one cell-generation to another.

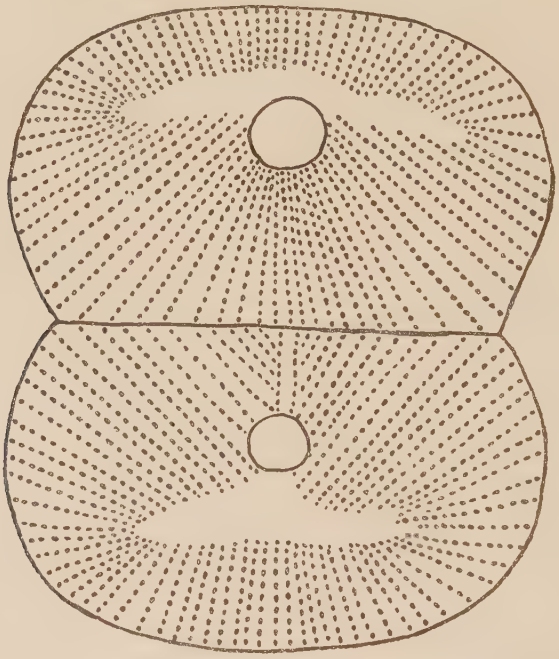


Fig. 65—Cell-division (Hertwig) — (Cell of Sea-urchin)

There is an infrequent process of cell division said to take place in the epithelium of the bladder. It is called *amitosis,* in which the nucleus is simply cleft into two daughter nuclei: the nucleus and cytoplasm equally divide.

Impregnation in vertebrates is effected by the union of two cells. In se this would double the number of chromosomes. A special provision prevents this. As the germinal cell develops its chromosomes are reduced to half their original number. The same happens in the process of maturation of the oöcyte. This is proper to germ-cells, and is called the *reduction division* of the chromosomes.

The simplest form of animal life is the unicellular organism of microscopic size. The unicellular animal propagates by division into two cells. The offspring cell is a counterpart, and endowed with the attributes of structure and function of the parent cell.

From this simplest form of animal life the line stretches upward. Instead of the one cell we find multicellular organisms always increasing in the number of cells and the complexity of the organs formed by them, and the functions thereof. At the apex stands man, the paragon of nature.

The reproduction life precess begins when the male pronucleus formed by the head and a portion of the *middle piece* of a spermatozoon or male germ cell unites with the female pronucleus, the mature ovum.

The spermatozoon is a modified cell, consisting of a head, a middle piece, and a flagellum or tail. The head is short and flat pyriform, the narrow end projecting forward. The spermatozoa are microscopic in size about 0.055 mm. in length. They are by karyokinesis or cell division formed in immense numbers from the germinal epithelium of the *tubuli seminiferi* of the *testes*.

The male semen or fecundating secretion is composed of a clear, limpid fluid called *liquor seminis*, holding in suspension the spermatozoa, seminal and other granules, epithelial cells, oil globules and leukocytes. The ejaculated semen is a thick whitish fluid of the odor of garlic.

The essential fecundating element of the semen are the spermatozoa which are elaborated by the mature testes. The spermatozoa are not animals; they are mere cells endowed with a vibratory forward motion, which is believed to be produced by the lashing movement of their tails.

By some biologists they are called spermatozoids.

They exist in immense number in the male semen, but only one of them is necessary for fecundation. If under the microscope the male semen immediately ejaculated shows no spermatozoa or no motility of the spermatozoa it is not fertile.

In the male the elaboration of semen begins with puberty, ordinarily from the 13th to the 16th year, and continues during the whole life, although in the epoch of senility, the testes are less active, and the semen less fertile. The sexual function leads the file of the weakening bodily functions. Senile impotence therefore is according to the course of nature. There is a wide divergency in sexual power in old men. Some octogenarians have well-developed spermatozoa: these are exceptions. The functional capacity of the male sexual organs is said to diminish with the fiftieth year: after the sixty-fifth year sexual vigor is considered an exception. Erection and orgasm may have place: but the spermatozoa are usually not endowed with the power of germinating. Exceptions are found. Edward Martin, cited by Vecki (Sexual Impotence), reports a man "who at the age of seventy-eight has begotten a child, and who states that his erections are as vigorous as in youth, and that he performs the sexual act frequently and satisfactorily".

From study and observation the author is persuaded that the "dead line" of sexual impotency is drawn about a decade too early. We shall all

admit a decline about sixty; and this decline is rapid in most men, often extinguishing sexual power between seventy and eighty.

Complete castration destroys the power of fecundation; but the power of erection and penetration of the vagina may remain.

Sexual passion is not completely eliminated by castration.

The presence of one healthy testicle is sufficient for spermatogenesis.

The spermatozoa are begotten by karyokinesis from the primordial germ cell. This primordial cell divides into two spermatogonia, which in turn divide in the same manner, forming four spermatogonia.

Every spermatogonium now by mitosis divides into two primary spermatocytes. The karyokinetic process evolves two secondary spermatocytes out of every primary spermatocyte, and each of these generates by karyokinesis two spermatids. The spermatids undergo no karyokinesis, but by a transformation within themselves they develop into the spermatozoa. Every spermatozoon is capable of fertilizing a mature ovum.

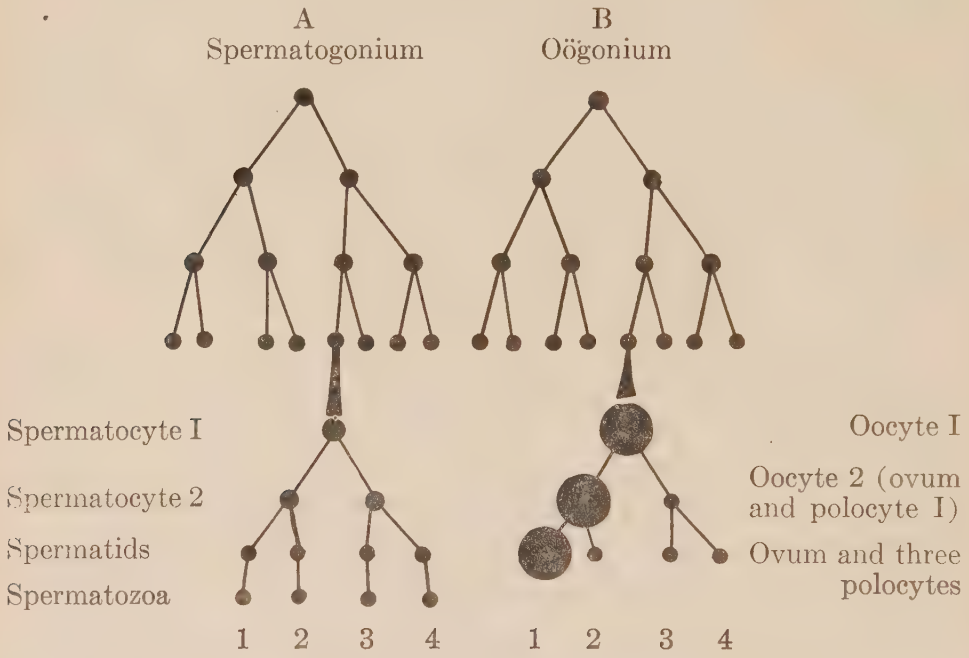


Fig. 66—Diagrams of maturation in spermatogenesis and oögenesis. (Boveri)

The semen elaborated in the spermatic tubuli of the testes passes through their less convoluted ducts, called the *vasa recta,* through the *mediastinum* into the *rete testis.* At the upper end of the mediastinum of the testis the vessels of the rete testis terminate in from fifteen to twenty ducts called the *vasa efferentia;* they convey the semen to the *globus major* of the *epididymis.* At first, their course is straight, but they soon dilate in convolutions to form a series of conical masses called the *coni vasculosi.* From these conical convoluted ducts the semen passes into a single duct,

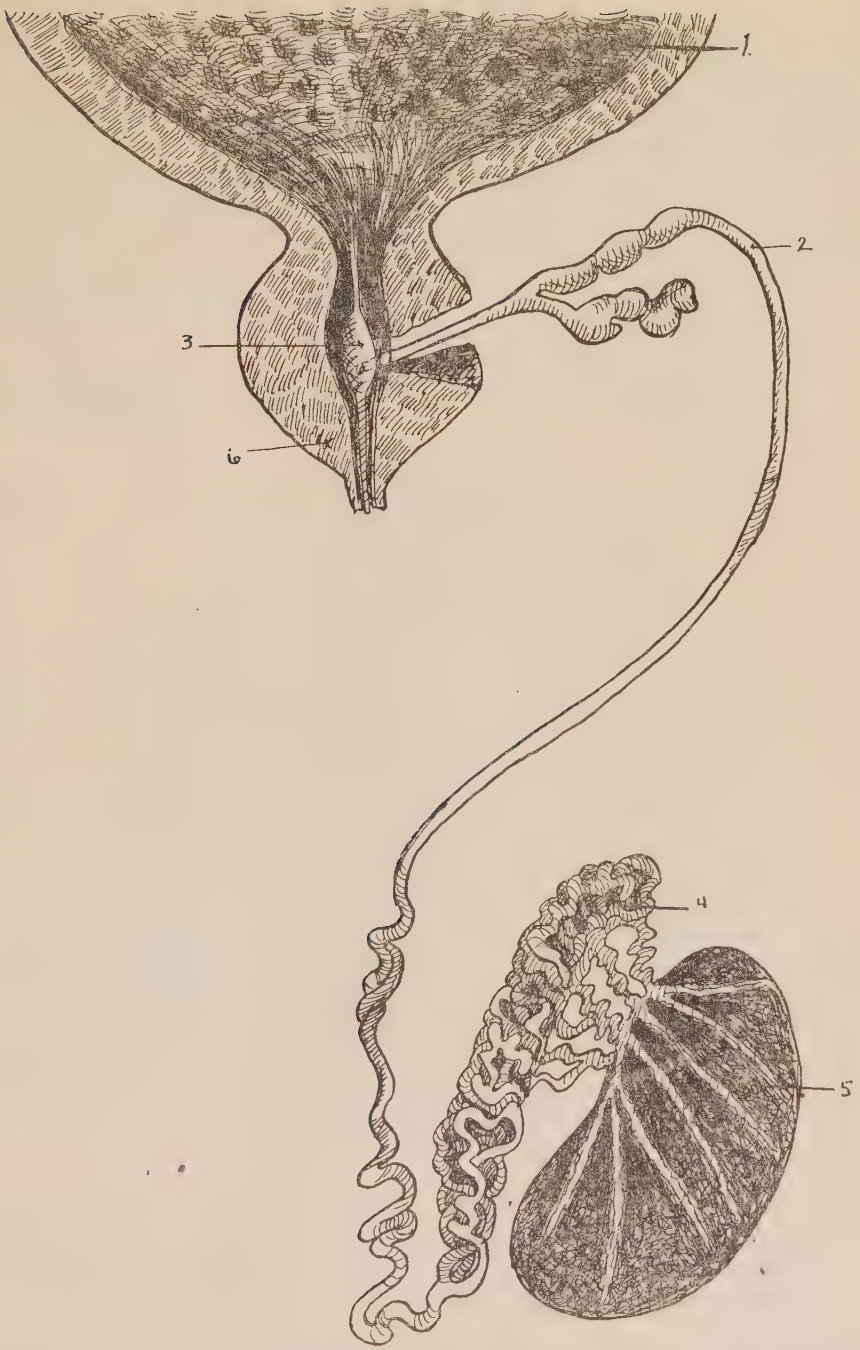


Fig. 67—CIRCULATION OF SPERMATOZOA. (Schematic)

1. Bladder.
2. Ductus deferens.
3. Colliculus seminalis.
4. Ductus epididymidis.
5. Septulum testis.
6. Prostata.

the body of the epididymis. The body of the epididymis is densely convoluted. If unraveled this threadlike duct would measure upwards of twenty feet in length.

The semen passes down through the body of the epididymis into the globus minor, whence it is borne by the ascending *vas deferens* into the *vesicula seminalis* situate between the base of the bladder and the rectum. The *ejaculatory ducts* formed by the junction of the ducts of the *vesiculae seminales* with the *vas deferens* excrete the semen into the urethra, whence it passes out through the penis.

The forgoing process is furnished to each testicle: the first union of the two systems is effected when the two excretory ducts of the seminal vesicles pour the semen into the one urethra.

In its passage from the testicles to its exit from the *glans penis* the semen receives the secretions of the seminal vesicles, of the *prostate gland,* of *Cowper's glands,* and of *Littré's glands.*

Some authors believe that the function of these secretions is to dilute the semen, and accelerate its passage, but it must be granted that while these secretions are necessary components of the semen, their nature and purpose have not been definitely determined.

In the normal state of man the semen is secreted very slowly, but when the organs are congested by sexual excitement the secretion of the semen is greatly increased. Voluntary sexual excitement should only be a preliminary to lawful sexual intercourse in marriage. Celibacy is incompatible with an unchastened attitude toward things of a nature to excite venereal desire. The celibate who dallies with women, or in any other way allows the sex stimulus to heat his blood will experience a fulness or aching of the testicles; a certain ennui of all things save the sexual desires; an irritability of temper and an indisposition to work and to pray. Nature is tantalized and disappointed: the distended seminal vesicles must soon discharge their abundance. The self-control necessary for a virtuous celibacy should be directed to control the entire tenor of the celibate's life. Finely developed virility is perfectly compatible with perfect self-control: the whole plan of the celibate's life develops in him by habit the consciousness of his aloofness from the exercise of his sexual powers. His boundaries set a limit to his thoughts, to his social attitude, and his acts. Renunciation must extend itself to the basic conception of the celibate's life: he renounces not alone the actual use of the sexual power but also the thought of its use and every act that is contrary to his tenor of life.

"While marriage, with sex intercourse and parenthood, is a normal expectation for human beings, neither sex intercourse nor parenthood is necessary for complete physical, sexual, or mental development, for physical or mental health, for happiness, nor for a successful or useful personal or social life.

"Recognizing that no mode of life is so rich and developing as successful married family life, it still remains true that there are compensating forms of service to humanity and of happiness open to the mass of young women and men who do not marry, which amount in some degree to an unselfish substitute parenthood. As in marriage itself success in this sort

of life is a matter of character and service. These services of the race can and should be more recognized and honored by society. To indicate all the changes in our educational, social, political, economic, business, and spiritual life, which are involved in the enrichment of the opportunities of unmarried women, would take us too far afield; but this whole group of problems takes its place among the most vital that we face.

"Psychologically and esthetically (leaving out of consideration moral elements altogether) irregular and promiscuous sex intercourse without permanent bonds and mutual obligations can never be a satisfactory substitute for married life, either to the individual or to society." (Thomas Walton Galloway, Ph. D.)

The American Social Hygiene Association energetically proclaims that sexual continence is compatible with the highest type of manhood and womanhood.

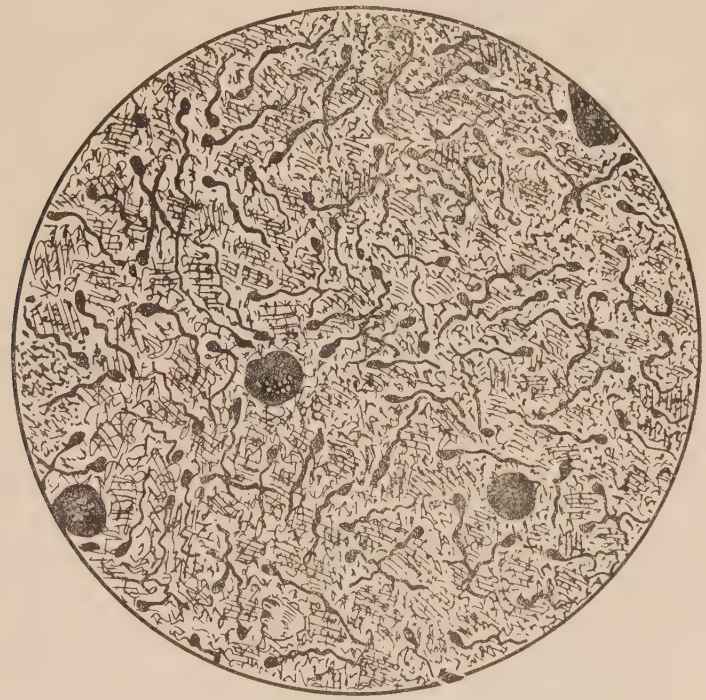


Fig. 68—Normal Semen. (Kisch)

The duration of vitality of the spermatozoa is not accurately known. The length of their life within the organs of the being who produces them is not known. It is certain that they live longer when ejaculated into the body of the woman than when deposited externally. In ordinary circumstances, outside the body, the spermatozoa die within a short interval. Proper chemical solutions and a required temperature might lengthen this interval a little. It is asserted that they begin to move again when thawed out of a frozen state. Whether their power of fecundation is still preserved in such transition is not known.

Much that is merely conjectural hypothesis is asserted of the spermatozoa. Lode estimates that in one discharge of semen there be 227,500,000 spermatozoa. Science can not accurately know such fact; it only knows that these sperm cells are in great number,—the number must remain indefinite.

Spallanzani's (1768) theory that the spermatozoa are the active element in impregnation of the ovum is generally accepted.

Keibel reports that he has taken live spermatozoa from an executed criminal three days after his execution. Others report them motile in the Fallopian tubes three and one-half weeks after coitus.

Outside the body the spermatozoa have given evidence of motility eight days after emission. The motility of the spermatozoa does not evince their power to fecundate the ovum. The duration of their fertilizing power depends on the conditions in which they are placed. In 1915, Lillie, from a study of the sperm of sea urchins arrived at the conclusion that the spermatozoa's power of fertilization is lost long before their motility ceases.

Moll (1918) assigns a probable life span of 24 hours to the ovum after ovulation, and a shorter period of fertilizing power to the spermatozoa.

De Lee declares that the spermatozoa will live nine days in an incubator, and that they live at least three weeks in the Fallopian tubes.

Authenticated cases of coitus are recorded where the hymen has remained intact, showing that full entrance into the vagina was not effected by the male organ; and yet pregnancy has followed. In such cases the spermatozoa undoubtedly were injected through the narrow orifice of the virginal hymen, and by their own inherent motion they reached the ripe ovum. These cases are extremely rare: they mark the extreme bound of possibility.

Edgar cites Grey as authority for the statement that "authentic cases in which prostitutes have had perfectly preserved hymens are on record." I doubt the fact.

Acids kill the spermatozoa; but the alkaline mucus of the uterus and tubes is favorable to their life and activity. Undoubtedly an excess of acid mucus in the genital tract is the cause of many cases of sterility. The acidity of the vaginal secretions vary in different types of women, and in the same woman at different times.

The most probable theory is that the spermatozoon propels itself forward from the point of ejaculation to the place of the ovum by the undulations of its tail. Capillarity of the cervix may aid or may be the complete cause.

According to the weighty authority of Rohleder (Die Zeigung beim Menschen) at the height of orgasm, the Bartholinian glands pour out their secretions, the mucous plug is extruded from the cervical os, the cervix descends to meet the penis, a peristaltic wave of the vaginal musculature commences at the vaginal orifice and extends upwards, forming an aspiratory or suction action, by which the male semen is sucked into the dilated os uteri, which also aids in the suction. This is a very probable opinion. In this view orgasm is a powerful aid to impregnation of the ovum. It is

not however essential since conception may in rare cases have place without orgasm and even without full intromission of the penis.

The fact is certain that the spermatozoa move forward from the point of deposition to the terminus where they meet the egg. It is equally certain that the proximity of these two points and the aforesaid feminine orgasm promotes fecundation.

In all our work scientific hypotheses are accepted merely as hypotheses, and no more is asserted of them than their probability, graded according to the observations on which they rest. Science is a combination of natural certitude and hypotheses: the hypotheses have a wide range. In this wide field of hypotheses the opinions of the learned range themselves in great variety. For instance, the seminal vesicles are generally regarded as receptacles of the semen: De Lee denies this function.

Hoehne asserts that the spermatozoa lose their vitality within three days in the most favorable place, the Fallopian tubes. He believes that in the vagina they die within three hours. This seems the more probable view. In medicolegal cases it is advisable to base the judgment on a short interval between coitus and impregnation.

The vaginal mucus is acid; in a few hours it kills the spermatozoa which do not escape its influence: the mucus of the uterus and tubes is alkaline, favorable to the life of the spermatozoa. By the law of chemotaxis the living sperm cell moves away from the deleterious agent, in the direction of the favorable conditions. The more complete is the penetration of the vaginal tract in the act of copulation, ceteris paribus, the more likely is impregnation. Semen deposited near the orifice of the vagina has but slight chance of fecundating the ovum. Rare instances have taken place. Physicians *fide digni* have attested to the author that such fact has chanced in their own wives in their first pregnancy.

Oögenesis.—The ovaries (testes muliebres, Galen), are the female sexual glands, in which the ova are formed. The ovary, or oöphoron, is oval, elongated, flattened from above downwards. They are situated one on each side of the uterus in a depression called the *ovarian fossa.* They are behind and below the Fallopian tubes, and are attached to the broad ligament by two layers of the peritoneum. The ovaries are also attached to the Fallopian tubes by means of one of the fimbriae of the tubes.

The ovaries of different women vary much in size.

The average adult ovary is shaped like a large almond. Its medium size is: length, 1 to 1½ inches; breadth, ¾ inch; thickness, ¼ to ½ inch. Its medium weight is about 2 drachms.

The ovaries are of a dull grayish pink color; prior to puberty their surface is smooth, but after puberty they gradually become pitted and puckered, probably due to the periodical rupture of the Graafian follicles. The ovaries are densely fibrous.

The ovaries are developed early in fetal life, and at birth they are relatively quite large. The complete development of the ovaries and their power of ripening ova are effected at puberty.

The *oöcytes* or ova are developed by karyokinetic stages analogous to the karyokinesis of the spermatozoa. The ova are developed from the

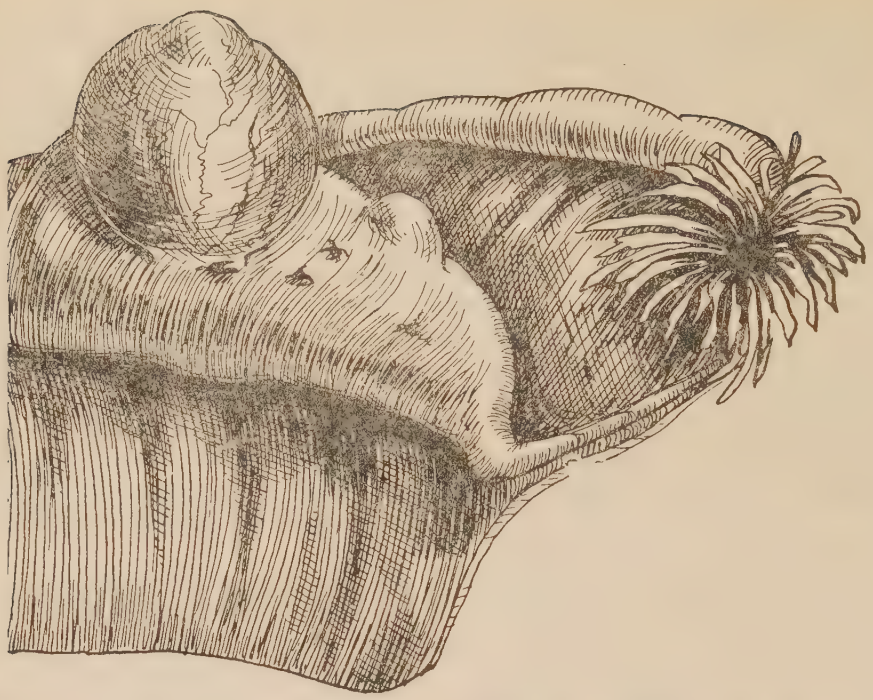


Fig. 69—Fallopian Tube and Ovary, showing Mature Graafian follicle. (Ribemont-Dessaignes)

germinal epithelium of the ovary. The original source of the ovum is the primordial germ cell. By a series of mitotic divisions these cells are developed into the oögonia, corresponding to the spermatogonia of the male. By mitosis these oögonia develop into the primary oöcyte. Then follows a period of growth of the primary oöcyte. In 1672 Reinhart de Graaf (1641-1673) discovered these oöcytes lying in follicles of the ovary, which are since called the Graafian follicles.

Up to this point the mitotic changes of the ova are accomplished in the ovary of the foetus during its intrauterine life. Some authors believe it probable that in some cases the karyokinetic process may be prolonged into the first few years of extrauterine life. Thus all or nearly all of the primary oöcytes are present in the new born babe. Their number is estimated between 36,000 and 200,000.

The ovum now enters its maturation period. There is no longer mitosis into equal cells, but the primary oöcyte in its development into a secondary oöcyte extrudes a small cell called the first polar body. This is an inactive cell: it divides into two cells which disappear.

The secondary oöcyte again extrudes an inactive cell called the second polar body. It disappears without mitosis.

This unequal karyokinesis takes place near the surface of the Graafian follicle during the latter period of the maturation of the ovum.

Nature's purpose in extruding these inactive polar bodies is not well understood. According to some authorities the extrusion of the polar

bodies has place near the surface of the ovary as the follicle is being made ready to escape. Others assert that it occurs after the rupture of the ovarian follicle. The former opinion seems more probable: this extrusion must precede impregnation: rare cases of ovarian pregnancy are recorded.

These polar globules or cells were discovered by the French anatomist Charles Philippe Robin (1821-1885). They have not been observed in the human ovum, but are found in all animals where competent observation is possible. "Many of the statements which are accepted in human embryology are made on the strength of what has been observed to occur in the lower animals and their existence in the human subject is merely a matter of inference."—Gray

The ovum is now mature and ready for fecundation. It corresponds to the male spermatid save that the spermatid undergoes further nonmitotic transformation into the spermatozoon. The measurements of the mature ovum given by authors range from 1-125 of an inch to 1-150 of an inch.

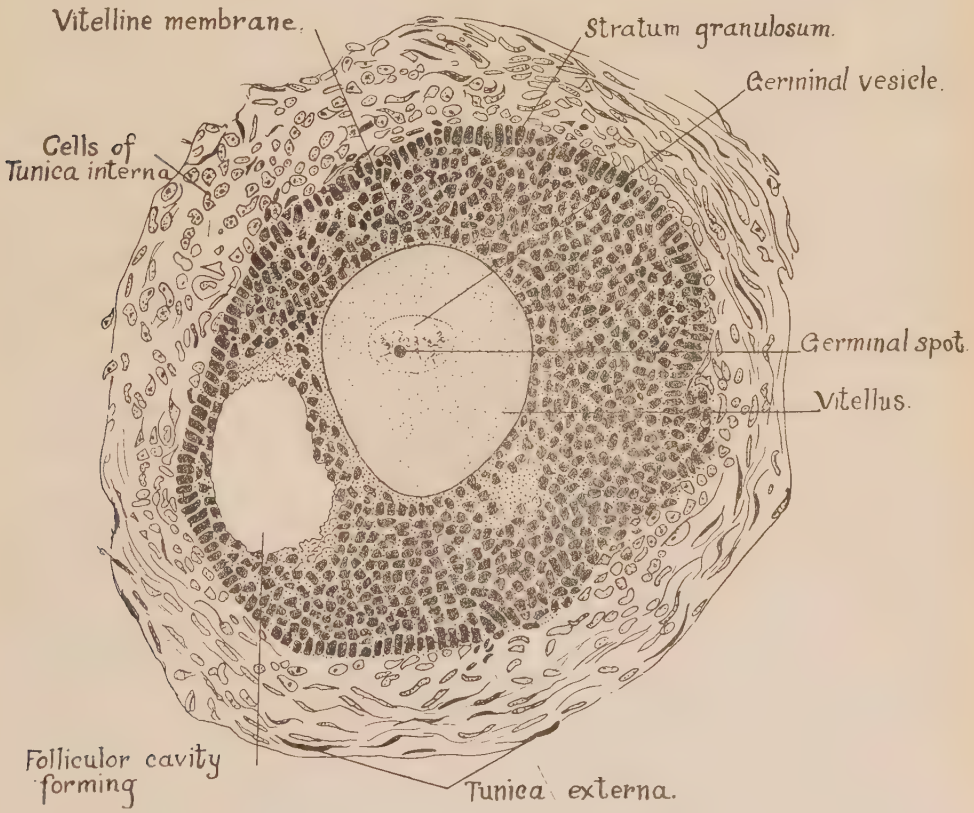


Fig. 70—The Ovum. (De Lee)

The ovum is composed of a cell-wall, a cell-body, a nucleus and a nucleolus, or germinal spot.

The cell-wall or vitelline membrane surrounds the vitellus or yolk. External to the vitelline membrane is the zona pellucida, separated from

the vitelline membrane by the narrow *perivitelline* space. Microscopic striae radiate across the breadth of the zona pellucida, for which cause it receives also the name zona radiata. Investing the zona radiata are several layers (100 or more) arranged radially around the radiata forming the corona radiata. The innermost of these cells send processes through the pores of the striated zona radiata to the cytoplasm of the ovum. These pores serve as passages for nutritive matter and for the entrance of spermatozoa.

The ovum is a typical cell: it contains cytoplasm, deuteroplasm (the nutritive part of the yolk), a network of chromatin fibrils, within which spongioplastic network lies the paraplasm, and a nucleus or germinal nucleolus or germinal spot.

Ovulation is the extrusion of the ovum from the Graafian follicle. It originally lies embedded within a heap of cells known as the discus proligerus. As the Graafian follicle matures it moves to the surface of the ovary, then bursts, liberating the *liquor folliculi* and with it the ovum.

The ovum is now ready for fertilization or impregnation.

The ordinary course of the mature ovum after ovulation is into the oviduct and thence to the womb. It is the common opinion of biologists that impregnation usually takes place in the Fallopian tubes. It may however be effected in the ovary, in the womb, and in the abdominal cavity.

It is not definitely known how the ovum is conducted into the Fallopian tube. It is one of those laws immanent in nature placed there by the Infinite Architect, of whose works we have but dim partial knowledge. In the natural order the reproduction of man's life is only possible by the fusion of the male and female germ cells called conjugation. Parthenogenesis among the higher animals and man is not found in the course of nature. The virginal birth of Christ is a miracle wrought by the power of God in a manner unknown to us.

Since man's nature is dependent on conjugation for its reproduction, a law governs the process by which the ovum follows the course by which it shall evolve into a human individual.

"Some authors state that the end of the tube becomes applied against the ovary by the aid of muscular movement, and, so to speak, sucks in the discharged ovule, while others hold that the movements of the vibratile cilia, with which the epithelium of the tubes is furnished, suffice to draw the ovule into the cavity" (Forel). The waving of the cilia is towards the uterus and thus creates a current to suck the ovum into the fimbriated end of the tube. The progression of the ovum through the tube is aided by the peristaltic action of the tubal walls, aided by the ciliary wave. In experiment with rabbits the sucking power of the tubes seems to be established.

The length of time required for the human ovum to reach the uterus has not been established. Hyrtl (Joseph Hyrtl, anatomist of Vienna, 1811-1894) found the unfertilized ovum of a dissected virgin in the interstitial portion of the tube four days after menstruation had begun. It is self-evident that it is practically impossible to determine the length of time required for the descent of the ovum from the ruptured follicle into the uterus. Conjectures range from four days to three weeks. Experiments

on dogs seem to establish for such descent a probable period of from eight to ten days. It thus results that it is not possible to determine whether it be the ovum corresponding to the preceding menstruation or the ovum corresponding to the menstruation following the copula that is fecundated. The spermatozoa thrive in the menstrual mucus.

It has been deduced from the aforesaid principles that in the child-bearing period of a woman's life fecundation may take place at all times. This seems to be incorrect. It is quite probable that there is a quiescent period of indeterminate length within every interval from ovulation to ovulation, but we are not able with certainty to locate this immune interval. There are three unknown factors in the reckoning: (1) the date of ovulation; (2) the length of time required for the ovum to reach the uterus; (3) the life span of the unfertilized ovum. De Lee believes that it is improbable that the unfertilized ovum lives longer than eight days. Other authorities assign it a much longer life span. The common practice of women is to compute their period of gestation from their last menstruation. A period of 280 days is reckoned from this terminus *a quo*. Experience seems to bear out this popular belief. The hypotheses of theorists have not given us anything better than this general belief.

Experience has also shown that the most favorable time for conception is during menstruation and immediately after menstruation. In fact a probable immune period of about ten days may be established, viz., from the seventeenth day after the beginning of the menstrual flow until the first day preceding the next flow. Many who wish to limit their offspring and still remain within the moral law confine their coitus within this interval. Results confirm the theory. Still it is by no means an infallible rule. In fact, the author has known where pregnancy falling in that interval has caused bitter resentment against a confessor who overstated the immunity of this period. It is true to state that the liability of conception during this commonly believed immune period is not as great as that of ordinary onanism.

In "Principles and Practice of Obstetrics", p. 26, De Lee declares that "Jewish women, by the Levitic law, were obliged to leave the bed of the husband during and for one week after the period." He cites Leviticus XV, 19. This is erroneous: the whole period of separation for a menstruating woman was seven days. Even though her flow ceased earlier she was separated from her husband's bed the seven days. In a prolonged flow the separation continued during the flow.

The mature ovum expelled from the Graafian follicle may be perceived by the eye as a fine white point whose diameter is estimated to measure one-fifth millimeter.

After ovulation the walls of the Graafian follicle collapse, a blood clot forms, and lutein cells festoon about the clot. This is called the corpus luteum (yellow body). When impregnation has not taken place the corpus luteum quickly atrophies and leaves only a slight scar. This is sometimes called the false corpus luteum, or corpus luteum of menstruation.

According to some authors such corpora lutea have been found in new born babes. This seems very doubtful.

When impregnation has been effected the corpus luteum grows up to the thirteenth week, attaining a mean size of a large hazelnut. It is then quiescent until the last stage of pregnancy, at which point it suffers retrogressive changes which continue several months after pregnancy. Retrogression continues, connective tissue replaces the lutein cells, until the corpus luteum is reduced to a small retracted scar. The corpus luteum of pregnancy is called the true corpus luteum.

The greater development and prolongation of the life of the corpus luteum in pregnancy establish a probability that these bodies have a vital relation to the function of gestation, but the nature of this relation is as yet unknown. The compound lipamin isolated from the corpus luteum is said to stimulate menstruation.

Impregnation of the Ovum.—Fecundation is effected by the fusion of the male pronucleus, or head of a spermatozoon with the female pronucleus of the mature ovum. Bischoff (Theodor Ludwig Wilhelm, German embryologist, 1078-1882), Barry (Martin Barry, English biologist, 1802-1855) and others assert that impregnation usually takes place in the ovary.

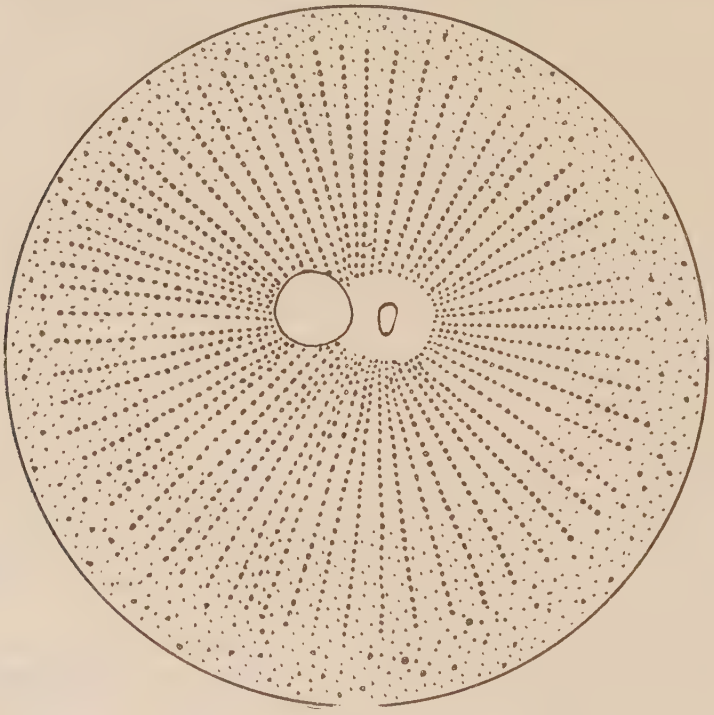


Fig. 71—Fusion of Spermatozoon and Ovum. (Hertwig)

That the ovum is sometimes fertilized in the ovary is attested by more than forty authenticated cases avouched by Norris, Penkert, Young and Shea. However, ovarian pregnancy is now regarded by the common opinion of medical authorities as a rare exception.

The regular course of the impregnated ovum is from the Fallopian tube into the prepared uterus, where it embeds itself into the soft mucous

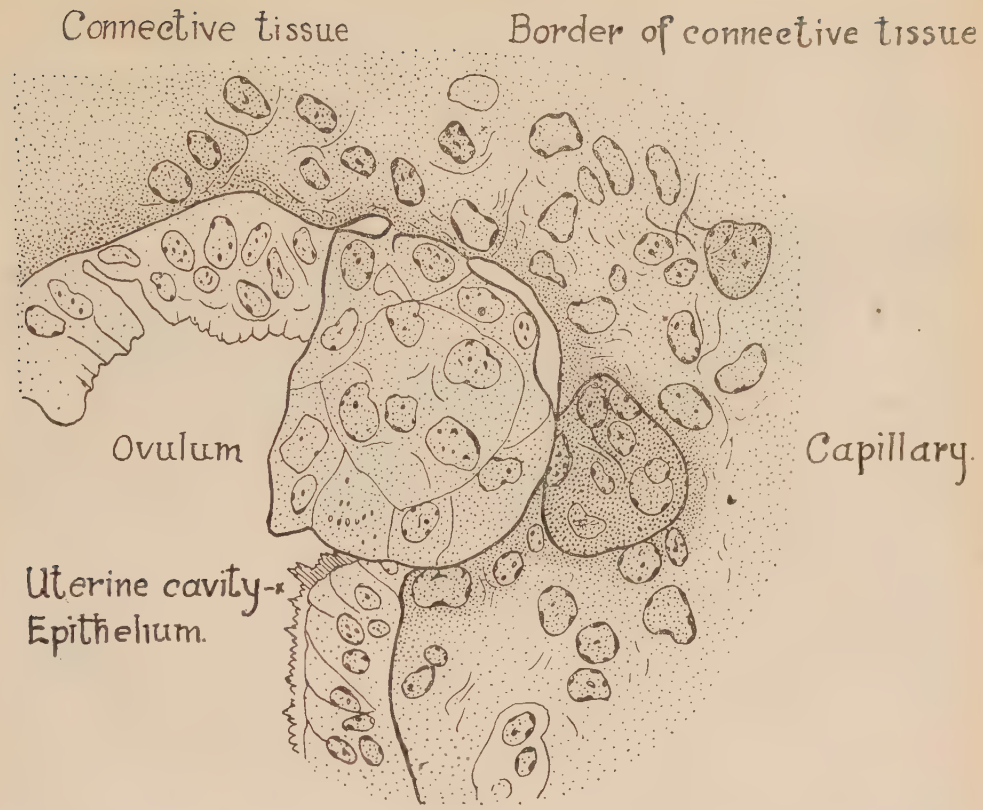


Fig. 72—Embedding of impregnated Ovum of the Guinea-pig in the Uterine Mucosa. (von Spee)

membrane of the uterus. This soft bed into which the ovum sinks is called the *decidua graviditatis;* it is thrown off after birth; hence its name, *decidua.* The tiny opening through which the ovum sank into the decidua is closed by the growth of the decidua reflexa, and the life process begins in that secure nest.

Fertilization of the ovum of the vertebrates results in the union of the male and female chromosomes producing the cleavage nucleus of the fertilized ovum, from which follows cell division, or karyokinesis. Only one spermatozoon unites with the female pronucleus.

In its passage through the vagina and Fallopian tubes the spermatozoon makes its mysterious way against the current caused by the cilia of these organs, which cilia stroke downward against the course of the spermatozoon.

Some biologists believe that an egg may be liberated by a pregnant woman, and may become fertilized by a postpregnant coitus. This rare, if possible, condition is called superfetation. It is denied by some biologists. It is not definitely proven. It may be an erroneous explanation of a belated twin which may be born several months after the first birth.

Fig. 73—Ovum distending Mucosa.

"Superfecundation is the impregnation of two different ova, about the same time, by two different fathers. Its occurrence in animals is proved, but though doubted for the human, is possible. A negro woman gave birth to a black and mulatto child, after intercourse with a black and (with) a white man. A white woman gave birth to a white and a negro child, but both these combinations may occur with only one father. To prove superfecundation we must ask, with Schultze, that a woman after intercourse with two men of different races and other than her own, bear twins showing the characteristics of both sires." (De Lee, op. cit. p. 476.)

Moll and Prentiss-Arey believe that impregnation of the human ovum takes place about one day after coitus. Though this opinion is not supported by direct observation, it is sufficiently probable to establish a point of time beyond which it would be unlawful for a woman overcome by violence to expel the seed. The victim of enforced coitus may expel the semen before fecundation, on the basis of defense against an unjust aggression. Some limit the time of licit expulsion of the seed to ten hours after coitus. This seems excessively rigorous. The interval between coitus and impregnation is subject to considerable variation; but the interval assigned as usual by competent scientists may be lawfully accepted by the aforesaid woman.

The usual place where impregnation takes place is probably the ampulla or outer end of the Fallopian tube. If the impregnated ovum is arrested in its course to the uterus tubal gestation will result. This is the most common form of ectopic gestation. There is no proof that impregnation takes place in the uterus, but it is not considered impossible. If the impregnated ovum fails to enter and pass through the tube into the uterus, it may wander into the peritoneal cavity, and then we have abdominal pregnancy. From experiment on lower animals it is believed that the ovum may wander from one ovary to the opposite tube; no proofs of this are found in human kind.

In copulation nature's purpose is to inject the semen as closely as possible to the place of fecundation. Consequently the instinct of nature and the powers of nature conspire to this end. The jet of the semen in ejaculation sends it on its way. The leap of the stud in his orgasm is nature's method of placing the male principle close to the ovum. In a normal copula the glans penis is exactly opposite and close to the aperture in the neck of the womb. The jet of semen is thus often injected directly into the os uteri. Moreover, in the human coitus the woman is impelled by a strong desire of the deepest possible penetration; the masculine impulse is to accomplish deep penetration of the vagina, and thus to place the active principle of generation in the most favorable place for conception. Spermatozoa deposited at the entrance of the vagina in isolated cases may travel to the ovum and impregnate it, but the chances are against them. Nature urges that the coitus shall be most apt for the begetting of life.

The union of the spermatozoon and the mature ovum has never been observed in man. There is no reason to doubt that in man it follows the same process observed in lower animals.

The spermatozoon borne forward by capillary attraction and by the lashing movement of its tail meets the ovum usually in the ampullar end of the tube. Biologists declare that a slight cone-shaped protuberance rises from the surface of the ovum at the point where the spermatozoon meets it. The spermatozoon enters this little "hill" and passes through a pore of the zona pellucida. The tail now disappears, the head of the spermatozoon, which is the sperm nucleus, advances towards the female pronucleus, which hitherto has lain quiescent in the yolk. As the male pronucleus advances the female germ cell shows receptive signs. It moves slightly forward to meet its approaching visitor. The two pronuclei meet and fuse. That fusion is conception. That complex nucleus is endowed with human individuality; an immortal soul is infused into it by the creative act of God; it is the receptacle of the paternal and maternal qualities and attributes; a new human individual is begotten. The cell division which now continues is the intrauterine growth of a human individual.

The human ovum measures from 0.22 to 0.25 mm. in diameter. The cytoplasm of the ovum is enclosed within radially striated membrane, called the *zona pellucida.*

We are here describing the fertilization of the vertebrates, in which there is no natural genesis of life without nuclear fusion.

Boveri and others assert that fragments of sea urchins' ova containing no *nuclei* have been fertilized by spermatozoa, and have developed into larvae. Loeb reports the fertilization of the ova of invertebrates by chemical and mechanical means, without the cooperation of spermatozoa. Biologists report adult frogs reared from mechanically stimulated eggs. Natural parthenogenis in the invertebrata seems to be verified.

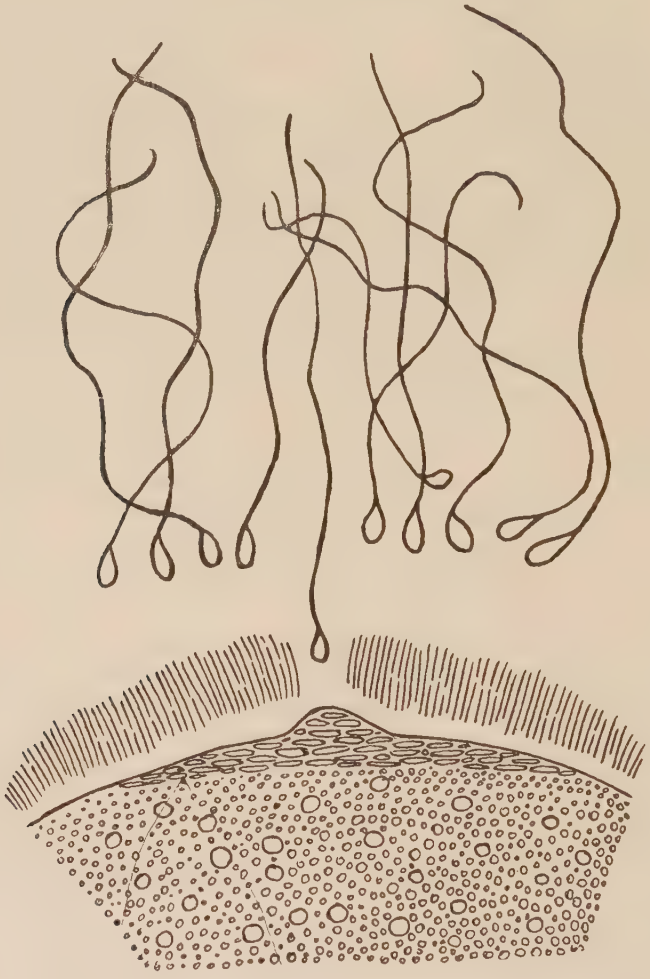


Fig. 74—Entry of Spermatozoon into Ovum.

Embryology.—The fertilized ovum moves down the tube into the uterus.

When the uterus is quiescent between the menstrual periods, its mucous membrane is thin, pale and smooth; the glands are small and the secretion is scant. About ten days before menstruation is due, the uterus enlarges and becomes congested; the endometrium, or mucous membrane lining the uterus, thickens; the epithelial cells enlarge, the capillaries are

filled with blood; the large round cells of the connective tissue rapidly proliferate; the glands grow in size and fill with secretion. The surface of the womb under the microscope reveals a velvety appearance. This is called the *decidua menstrualis.* It is the preparation of the womb to receive the ovum. The hyperemia of the surface of the uterus is intended to nourish the embryo. If conception takes not place, the uterus empties itself by the menstrual flow and by a series of regressive changes returns to rest again, but only for a few days until the process of the next menstruation begins.

Rightly is woman in Holy Writ called *"havah, life,* the mother of all life." (Gen. III, 20) In her fetal existence her ova are developed. From childhood to puberty her future great function of childbearing gives to her play and to her ideals a definite feminine character. The latent mother in the little girl moves her to love her doll with a foretaste of that love which she shall afterward bestow on her child.

The external genitals, bladder and rectum are almost fully developed at birth, but the uterus and ovaries are rudimentary and quiescent in normal cases until about the tenth year. Development then is set up in the normal child and proceeds more or less rapidly until puberty.

From puberty until the menopause the woman's main energy is focused upon the life processes. She is woman, the womb-man. It is amazing to contemplate the complicated process which nature sets up every month in this period of a woman's life. The woman's character and activities are vitally influenced thereby.

Natura non agit frustra. The importance of the child-bearing function justifies the employment of such a large part of woman's energy in a monthly preparation for the great function: in the production of life woman gives her whole being: gestation affects every organ in the woman's body. Love of children is the master motive in the normal sexual sentiment of woman. Rachel was best loved by Jacob, but his love and embrace satisfy not the soul of the woman. "Give me children, or else I die," she cries.

The fertilized ovum in its normal course comes through the tube into the uterus and attaches itself to the decidua menstrualis. Menstruation as a general rule ceases. The flow of bloody mucus that sometimes has place in the early stage of pregnancy is not a complete menstruation: it may be an excretion of the superflous blood not needed for the nutrition of the embryo, or a hemorrhage due to some special cause. It remains true therefore than a woman menstruates because she does not conceive.

The embryonal nucleus formed by the fusion of male and female pronuclei by karyokinesis develops into a mass of cells resembling a mulberry. This is called the *morula.* Driesch declares that broken fragments of the morula have grown into perfect embryos. The morula stage of the embryo is probably reached before the ovum comes into the uterus: no certain knowledge has been ascertained.

The blastomeres or cells of the morula now undergo segmentation. A portion thereof spread out and arrange themselves around the periphery forming a membrane of what becomes thereby the blastodermic vesicle.

This is called Rauber's covering layer. It is the primitive ectoderm enclosing the inner group of cells lying at the upper pole of the segmentation cavity. It is at this stage unilaminar. It is extraembryonic, and gives rise to the foetal part of the placenta and the chorion.

The mass of inner cells collect themselves at the upper or germinal pole of the blastodermic vesicle, where they are in intimate contact with the primitive ectoderm. The remainder of the blastodermic vesicle is filled with fluid.

Some of the cells of the inner cell-mass lying next the segmentation cavity spread out and line the interior surface of Rauber's covering layer. This layer develops into the primitive entoderm. The blastoderm is now bilaminar. It is called the *gastrula.*

Meanwhile important changes are being wrought in the remainder of the inner cell mass. Vacuoles form in the interior of the mass and progress until a cavity is formed called the amniotic cavity, which in man becomes the amnion. Around this cavity the embryonic cells arrange themselves first in two concentric layers. The layer nearest the amniotic cavity is called the hypoblast or entoderm. The outer layer is called the epiblast or ectoderm. Both these layers are essential parts of the embryo; they thus differ from Rauber's layer which is extra-embryonic.

At the periphery of the roof of the amniotic cavity the true embryonic ectoderm displaces that part of Rauber's layer. At this stage the blastoderm is bilaminar.

At the upper pole of the blastodermic vesicle the embryonic ectoderm thickens, thereby assuming a darker color. This is called the germinal disc or embryonic area. This disc passes from the oval to the pyriform shape with its narrow end directed posteriorly. Over its posterior portion a faint streak appears, extending forward in the median line to about the centre of the embryonic area. This is called the primitive streak, the first traces of the embryo. This streak is indented by a shallow groove, the primitive groove.

Experiments on human ova are few and unsatisfactory. Reichert (German Anatomist, 1811-1884) described a fertilized human egg, which he believed to be of the thirteenth day after conception. In it he found no appearance of embryonic structure. In a fertilized egg, believed to be of the fourteenth day, His (German anatomist, 1831-1904) found the medullary groove, and a ridge at one point, which he assigned as the rudimentary heart. The amnion was formed, and the allantois attached the embryo to the inner surface of the chorion. More recently Kretz-Peters (obstetrician in Vienna) and Spee (German embryologist, born 1855) have described early human embryos.

Peters' ovum is reckoned by many authorities to be not older than eight days. In it the ectoderm, the entoderm and the mesoderm are formed. The amniotic cavity is said to be clearly discernible.

At the anterior end of the primitive streak, about the middle of the embryonic area, the ectodermic cells accumulate, forming a dark spot, called *Hensen's* (German anatomist, born 1835) *node.* In front of this node in the median line of the embryonic area is another dark linear mark-

ing, which is the *head-process* of the streak. The primitive streak marks the direction of the axis of the embryo.

On each side of the primitive streak the cells of the epiblast proliferate so that they are heaped up into two *longitudinal ridges* on each side of a *furrow* lined throughout by epithelial cells. The proliferation of the ectodermic cells is also continued on each side of the head-process.

On both sides of the primitive streak and its head-process the ectodermic cells of the primitive streak and its head-process proliferate and insinuate themselves between its two layers,—blastodermic and entodermic. In this way the intermediate layer called the *mesoderm* or *mesoblast* is formed. Its cells are chiefly of the primitive streak and its head-process, but it is reinforced by cells of the subjacent entoderm.

There are now *three germinal layers,* the epiblast, the mesoblast, and the hypoblast.

The two aforesaid ridges are known as the *neural* or *medullary folds.* These folds begin in the anterior part of the embryonic area, where they are united. Proceeding posteriorly they separate and enclose the head-process, Hensen's node, and the anterior portion of the primitive streak. The folds proliferate, thus deepening the *neural groove* of which they are the banks. At this stage they are called the *medullary plates.* They now converge and finally coalesce, forming a tube, which receives the name of *neural canal.* This canal is composed of ectoderm, and is the rudiment of the whole cerebro-spinal nervous system. The cephalic end of the canal becomes dilated, giving rise to three primary vesicles, the rudiments of the fore-brain, the mid-brain, and the hind-brain. The remainder of the neural canal furnishes the cells from which the spinal cord is formed, and persists as the canal of the spinal cord.

Immediately under the neural canal and parallel to it the *notochord* is formed of the cells of the mesoblast. Lying deeper in the embryonic vesicle, and closed off from the notochord lies the *archenteron* or intestinal cavity. The notochord is the axis around which the vertebral column and its ligaments are developed.

The following structures are derived from the ectoderm:

1. The nervous system comprising the encephalon, peripheral nerves, spinal cord, and the sympathetic system.
2. The epithelial elements of the organs of sense, save the tongue.
3. The epithelial elements of the lobes of the pituitary body and of the pineal gland.
4. The crystalline lens.
5. The epidermis and its appendages,—the hair and nails.
6. The epithelial elements of the sebaceous glands, sweat glands, and mammary glands.
7. The plain muscular tissue connected with the hair follicles and plain muscular tissue of the sweat glands.
8. The epithelium of the roof and sides of the mouth (not that which covers the tongue and the back part of the mouth); the epithelium of the salivary glands; the enamel of the teeth; and the anterior lobe of the pituitary body.

9. The epithelium of the nasal fossae and the air-sinuses which communicate with them, and the epithelium of the nasopharynx.

10. The epithelium of the external auditory meatus and outer layer of the membrana tympani.

11. The epithelium of the conjunctiva and front part of the cornea.

12. The epithelium of the anal canal below the anal valves.

13. The epithelium of the spongy part of the male urethra.

From the *entoderm* are derived:

1. The epithelium of that part of the alimentary canal not reckoned in the preceding classification.

2. The epithelium of the tongue and of the back part of the floor of the mouth.

3. The epithelium of the liver, pancreas, and gall bladder.

4. The epithelium of the Eustachian tube and tympanum.

5. The epithelium of the thyroid and thymus bodies.

6. The epithelium of the larynx, trachea, bronchial tubes, and air cells of the lungs.

7. The epithelium of the urinary bladder, of the prostatic urethra, the membranous parts of the male urethra, and of the entire female urethra.

From the *mesoderm* are derived:

1. The bones, cartillages, dentine, cement, areolar tissue, fibrous tissue, and blood.

2. Muscular tissue, striated and plain, but not the muscular tissue of the sweat glands, the iris, and the *arrectores pilorum*.

3. The vascular and lymphatic systems, and their endothelial linings.

4. The serous and synovial membranes with their endothelial linings, and the bursal sacs of the body.

5. The kidneys and ureters.

6. The testes and their execretory equipments.

7. The ovaries, Fallopian tubes, uterus, and vagina.

8. The spleen.

The embryonic *mesoderm* develops into four parts:

Two of these form longitudinal columns, one on each side of the *neural canal* and *notochord*. These are called the *paraxial mesoderm*, since it surrounds the *neuraxis*.

The other two parts of the mesoderm are disposed in the form of sheets, known as *lateral plates*, each plate lying external to the corresponding paraxial column.

Coalescing vacuoles develop in each plate and form a cleft dividing the plate into an inner or visceral layer called *splanchnic mesoderm*, and an outer or parietal layer called the *somatic mesoderm*. The splanchnic mesoderm joins the entoderm, forming by their union the *splanchnopleure*, so named because from it is developed the connective tissue of the intestines.

The somatic mesoderm unites with the ectoderm to form the *somatopleure*, from which the framework of the body is built up.

Between the somatopleure and the splanchnopleure is the *coelom* or *primitive body-cavity*. The embryo is now constituted of the enveloping

somatopleure, destined to be the framework of the body; the pleuroperitoneal cavity, destined to be the pleural, pericardial, and peritoneal serous cavities; and the splanchnopleure, the basis of the viscera, etc.

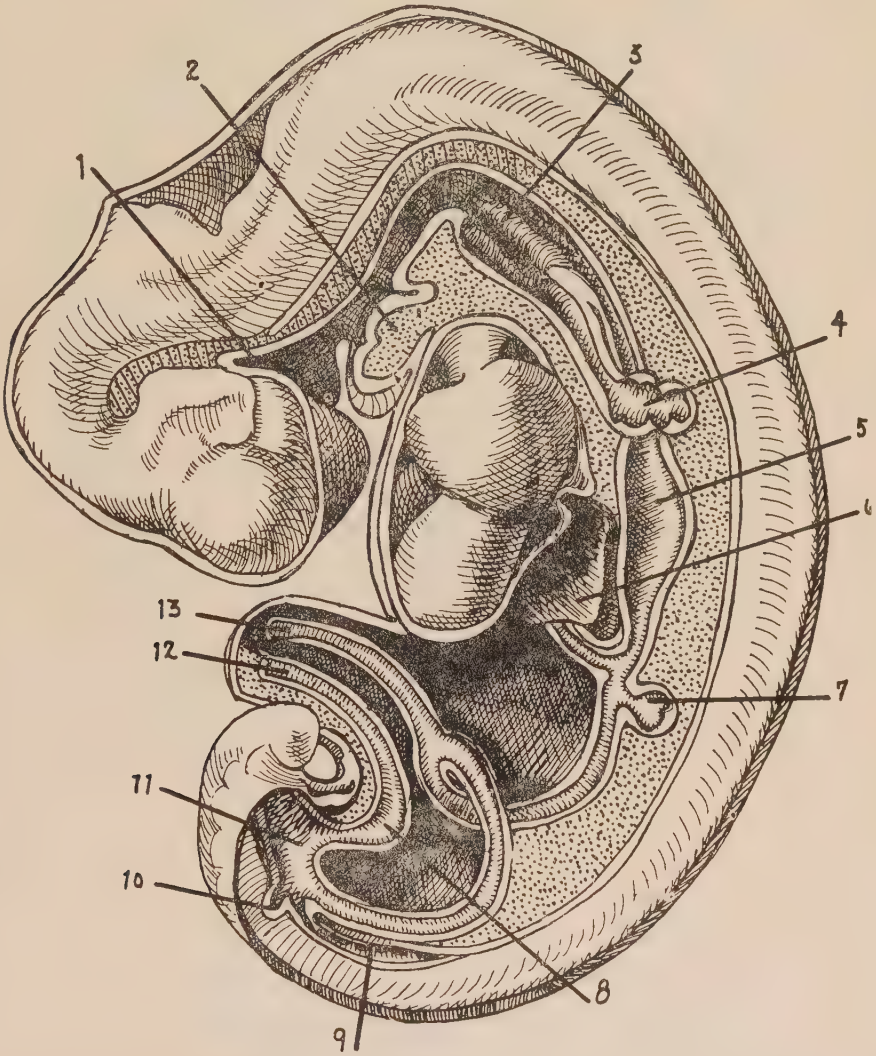


Fig. 75—Reconstruction of a 5 mm. human embryo, showing the entodermal canal and its derivatives. (His in Kollmann)

1. Rathke's pouch.
2. Tongue.
3. Laryngotracheal groove.
4. L. Lung.
5. Stomach.
6. Liver.
7. Dorsal pancreas.
8. Allantois.
9. Mesonephric duct.
10. Metanephros.
11. Cloaca.
12. Allantoic stalk.
13. Yolk stalk.

By an infolding process the embryo now becomes separated from the extra-embryonic area of the blastodermic vesicle. From the folds of the somatopleure a sac is formed which incloses the embryo. This is called the *amniotic membrane* or *amnion*. The amnion exists only in reptiles, birds and mammals. It is the innermost of the foetal membranes. It consists of two layers: the outer (false amnion) formed of the mesoblast; the inner (true amnion) developed of the epiblast. The false amnion lies outside of the true amnion and becomes separated therefrom. It is finally absorbed or becomes attached to the zona pellucida.

The true amnion is a bag of waters in which the embryo floats. Some believe also that the *liquor amnii* aliments the foetus. The amnion is also a protective structure, shielding the embryo, and containing the liquor in which it floats.

In human embryology the amnion is from the beginning a closed sac, formed within the inner cell mass of the blastodermic vesicle. The amniotic cavity is formed by the coalescence of vacuoles in the uppermost of these cells: the remainder of these cells form the embryonic disc or bud. The inner wall of the amnion is formed of ectoderm; the outer layer of the wall is formed of somatic mesoderm.

The embryo at first forms the floor of the amnion, but as it curves downwards, ventralwards it draws the walls of the amnion, and thus raises itself into the amniotic cavity. This curving infolding process constricts the blastodermic vesicle at a point towards the caudal extremity of the embryo. The constriction divides the cavity of the blastodermic vesicle into two compartments. The smaller compartment is intra-embryonic and gives rise to the *mid gut* or primitive *intestinal groove*.

The larger compartment of the archenteron is extra-embryonic and constitutes the yolk-sac or umbilical vesicle. The mid gut and yolk-sac are composed of splanchnopleure and are continuous with each other. They communicate at the point of constriction of the walls of the amnion, which point is called the vitelline duct or yolk-stalk. Through this point of communication of the embryo and the things outside of it the embryo is nourished and excretes effete material. The *allantois* and the umbilical cord enter the foetus at this point. In its later development the foetus through this belly stalk receives its nourishment from the *chorion frondosum* through the *placenta*.

The function of the amnion is important. It forms a sheath of the umbilical cord, and prevents shock to the embryo from the various movements of the mother's body.

At first formation the amnion is small, but it grows with the development of the embryo. In the second month it completely fills the egg and is throughout its whole extent contiguous to the chorion. The embryo freely floats in the liquor amnii.

The amnion is a thin, transparent, tough membrane. The liquor amnii is produced at the earliest period of pregnancy. It is in quantity from 500 to 2000 gm., at first crystal clear; later more opaque. More than 2000 gm. indicates the pathologic condition known as polyhydramnion. A

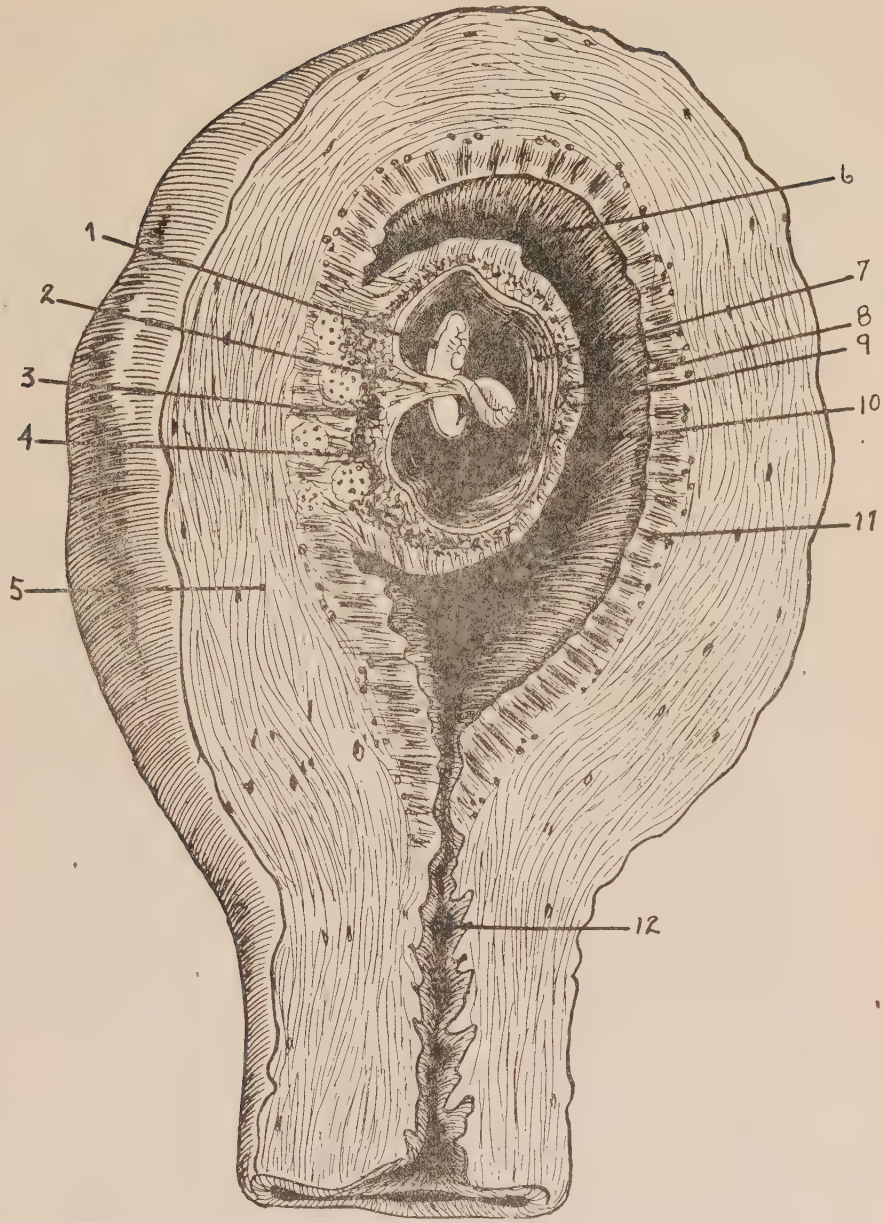


Fig. 76—Gravid uterus of about 1 month, longitudinal section.

1. Amnion.
2. Body stalk.
3. Chorion frondosum.
4. Decidua basalis.
5. Muscularis.
6. Uterine cavity.
7. Chorionic cavity.
8. Chorion laeve.
9. Chorion laeve.
10. Decidua capsularis.
11. Decidua vera.
12. Cervical canal.

quantity less than 500 gm. is the pathologic condition known as oligohydramnion. The fluid regularly increases up to the seventh month, and then decreases, as the foetus fills the amniotic cavity, up to full term. This diminishing is effected by absorption.

In the liquor amnii are found fats, albumin, inorganic matter, and the principal part water.

Many hypotheses have been put forth touching the liquor amnii. The most probable opinion is that it is a transudate from the maternal vessels, and that it aliments the foetus. The claim that urea (Prochownik) is present in the liquor amnii lacks confirmation. If the foetus regularly urinated into the liquor amnii, there should be a greater quantity found there. Moreover, it is abhorrent that the foetus should drink its own urine.

The uses of the liquor amnii are important:

1. At least it is probable that the foetus drinks it.

2. It is a water-cushion absorbing the shocks from without, and allowing free uncramped motion to the foetus.

3. It prevents the amnion from adhering to the foetus; preserves the umbilical cord from pressure; and renders the movements of the child less painful to the mother.

4. It helps to dilate the passages for the exit of the foetus and distributes equally in all directions the compression exerted on the foetus by the contracting uterus, and also washes out the vagina for the passage of the child.

The Chorion.—Outside the amnion lies a deciduous foetal membrane called the *chorion.* It is formed of the outer folds of somatopleure: its external surface consists of extra-embryonic ectoderm. The chorion thus includes (1) the embryo enclosed within the amnion, and (2) the yolk-sac or umbilical vesicle.

The interval between the amnion and chorion is named the *chorionic cavity.* This cavity yields to the expanding amniotic sac, and finally becomes obliterated, so that the somatic mesoderm of the inner surface of the chorion is in intimate relation to the somatic mesoderm of the outer surface of the amnion. In the second month the amnion completely fills the egg and lies upon the chorion throughout its extent.

From the outer surface of the chorion small bud-like processes grow into the contiguous maternal blood-lacunae. These form the rudimentary chorionic tuft. They receive the name of *villi* (Latin *villus,* shag).

The villi are at first formed entirely of ectoderm, but very soon the mesoderm of the inner layer of the chorion grows outward into these rudimentary villi as a core. In these cores capillary blood vessels are developed. The complete villi are club-shaped: they consist of: (1) An external envelope of ectoderm, the outer layer of which is a strip of protoplasm whose cells have no appreciable cellular boundaries: this is called the *syncytium;* (2) a vascular core of mesoderm; and (3) capillaries, an arteriole and a venous radicle or minute vein. The arteriole feeds the villi arterial blood.

Villi of equal size at first beset the entire outer surface of the chorion.

Antecedently to the formation of the villi the ovum has entered the uterus, and has embedded itself in the *uterine mucosa* usually at the upper part of the posterior uterine wall, close to the *fundus uteri.*

The *decidua reflexa* is stretched over the egg, covering it.

As the egg grows in size it pushes the decidua reflexa to the opposite side of the womb, where it is for the most part absorbed at the end of the sixth month. The villi of a particular area of the chorion invade the *decidua basalis* and grow luxuriantly into branches likened by Dalton to tufts of seaweed. They are sometimes called anchoring villi, since they burrow deep into the decidua basalis (serotina). From their branch-like form the chorion at this point is called the *chorion frondosum.*

The villi of the remainder of the chorion atrophy and disappear during the fourth week, leaving the surface smooth: hence it is called the *chorion laeve.*

Before the reception of the ovum the mucous lining of the uterus is uniform. The ovum usually burrows into the uterine mucosa at the upper

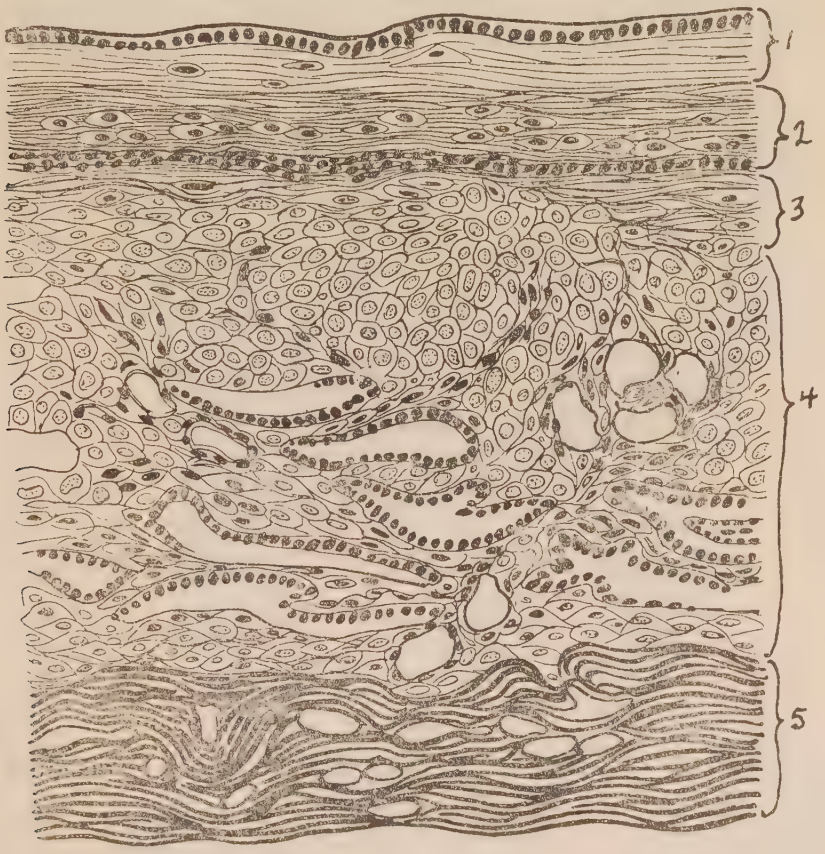


Fig. 77—Decidua at Fifth Month. (Bumm)

1. Amnion. 2. Chorion. 3. Decidua Reflexa or Capillaris. 4. Decidua Vera. 5. Muscularis.

part of the posterior uterine wall, close to the fundus uteri. The changes wrought in the mucous membrane of the gravid uterus differentiate the decidua into three parts. The *decidua vera* is that part of the mucous membrane which lines all that portion of the uterus outside of the field where the ovum has imbedded itself into the uterine mucosa.

The *decidua reflexa* or *capsularis* is formed from the margins of the excavation made by the ovum as it sunk into the uterine mucosa. The decidua reflexa covers the ovum as a capsule.

The *decidua basalis* or *serotina* is that portion of the uterine mucosa which forms the floor of the excavation made by the burrowing ovum.

The uterine mucosa is composed of three layers. The stratum compactum is the superficial layer which lines the inner surface of the uterine cavity.

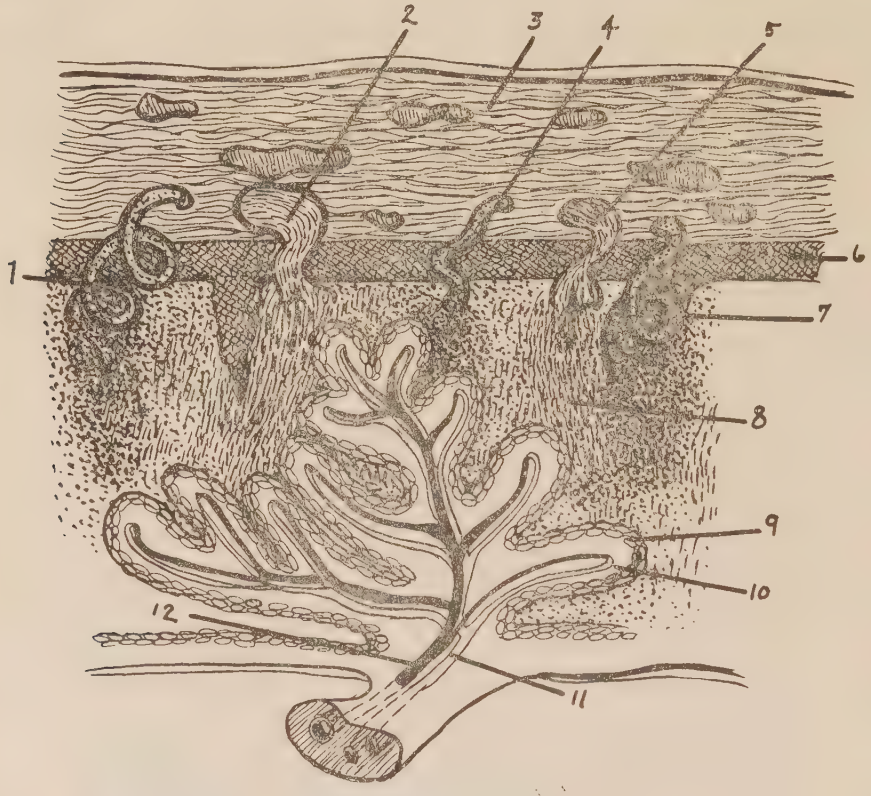


Fig. 78—Scheme of Placental Circulation.

1. Uterine artery in septum.
2. Sinus.
3. Muscular wall.
4. Uterine artery.
5. Uterine vein.
6. Decidua basalis.
7. Uterine artery in decidual septum.
8. Intervillous space.
9. Syncytium.
10. Villus.
11. Umbilical vein.
12. Umbilical artery.

The *stratum spongiosum* or *cavernosum* is more deeply placed.

The *stratum profundum* lies next to the muscular wall of the uterus.

The decidua basalis or serotina is richly supplied with blood. The villi of the chorion frondosum are bathed in this maternal blood. By osmosis this blood is conveyed to the developing foetus through the villi: in them the foetal blood freely circulates.

The chorionic villi luxuriantly branch out and become incorporated with the decidua basalis or serotina and form with it the *placenta.*

As the ovum sinks into the decidua basalis its ciliated columnar epithelium and the superficial part of the compactum disappear. Enumerating from the interior of the uterus towards its periphery there are thus left (1) the deep part of the stratum compactum; (2) the stratum spongiosum; and (3) the stratum profundum. The deep part of the compactum consists of two layers. The deeper layer called the basal layer lies upon the spongiosum, and is very vascular. The superficial layer of the compactum is now transformed into blood spaces, called *maternal blood lacunae,* or *intervillous spaces.*

According to some authorities the basal compactum is composed of nucleated protoplasm devoid of recognizable cells: this protoplasm receives the name of syncytium.

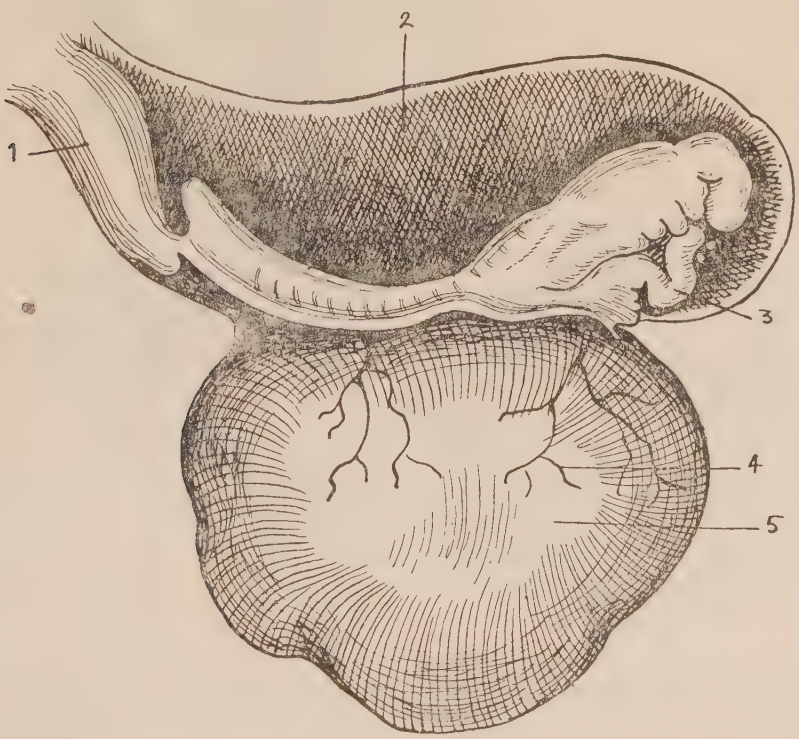


Fig. 79—Human Embryo of about 2.5 mm. (Prentiss-Arey)

1. Body stalk. 2. Amnion. 3. Heart.
4. Blood vessel. 5. Yolk-sac.

As the amnion and chorion form, the head and tail folds of the embryo elongate and the trunk laterally expands, so that a relatively narrow stalk of splanchnopleure connects the embryo with the yolk of the egg. The human ovum is of relatively small size, 0.22 mm. to 0.25 mm. in diameter. The cytoplasm of this minute cell contains yolk granules, but the yolk of the human ovum is very small in comparison with the yolks of eggs destined to develop outside of the body. That which we call the yolk of the hen's egg, etc., is the egg proper.

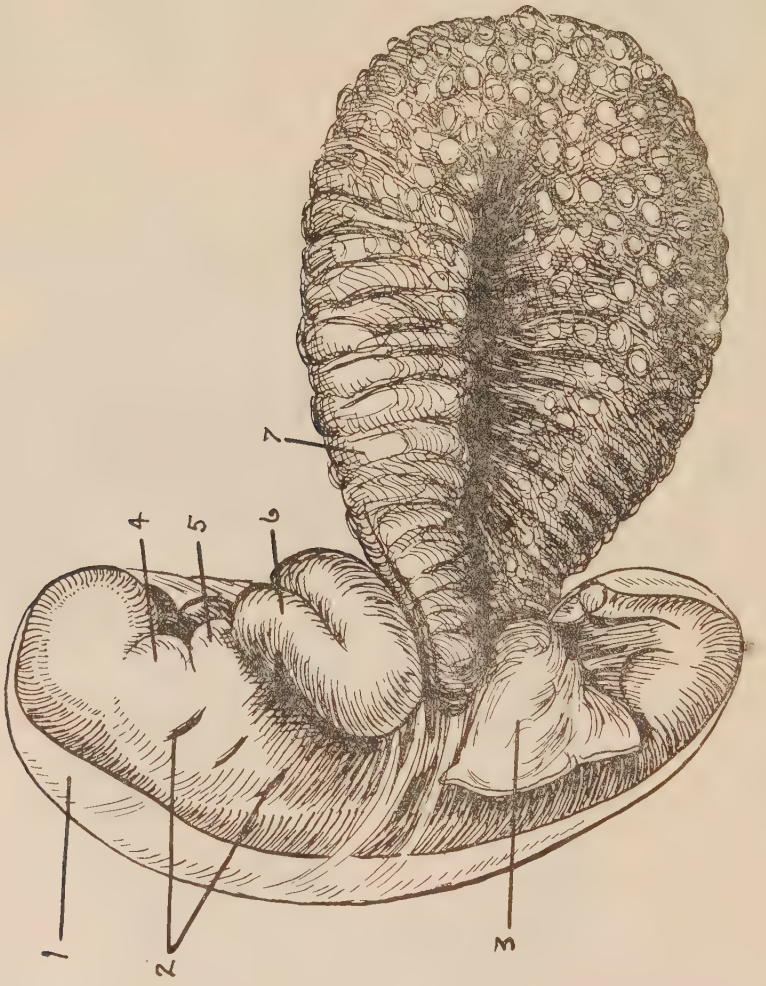


Fig. 80—Human Embryo 2.6 mm. Age about 1 month. (Prentiss-Arey)

1. Amnion.
2. Bronchial grooves 1 to 3.
3. Body stalk.
4. Maxillary process.
5. Mandibular process.
6. Heart.
7. Yolk-sac.

As the human ovum develops, the yolk granules are inclosed in the *yolk sac,* with which the embryo comes into communication through the aforesaid *yolk stalk.* In its very early growth, the embryo is nourished from the yolk, which contains the nourishing element, lecithin. Through the lumen of the yolk stalk the elements are conveyed immediately into the primitive gut.

The yolk sac is small in the human embryo, and soon degenerates, giving place to the *allantois.* In its very early age the embryo is nourished from the yolk sac, but as it evolves beyond this stage its mesoderm is brought into trophic communication with the mesoderm of the chorion through which it draws sustenance from the maternal blood.

This intercommunication is effected through the body stalk or allantoic stalk. This stalk extends from the umbilical orifice of the embryo to the placental area of the chorion. In fact, after traversing to the chorionic cavity the allantoic stalk blends with the *chorion frondosum.*

The allantois (thus named from the Greek term meaning sausage-like) is developed from the hind gut of the embryo, and lies within the aforesaid body stalk. It lies at the caudal side of the yolk stalk or *vitelline duct.* The allantois is furnished with two arteries and two veins and is concerned with the embryo's respiration, nutrition and excretion.

Much of the data touching human embryos is inferential. It is evident from the nature of the theme that the human embryo can not be studied with the facility which attends on the study of embryos of other fauna. Dissection of these lies openly in science's domain; whereas many insurmountable difficulties attend on the dissection of human embryos.

Wherefore science mainly infers the conditions and functions of human embryos and the development and functions of their organs from the nearest related mammalia. But uncertainty enters at this point. Though there is a general similarity among the embryos of the mammalia, there are also important variations. The allantois of human embryos is still imperfectly studied. Considerable divergence of opinion exists among biologists touching its development and functions. The most probable data seem to be that it is a diverticulum or cul-de-sac, quite small in the human embryo, originating from the splanchnopleure of the hind gut, composed of an inner layer of entoderm and an outer layer of splanchnic mesoderm. Embedded in the body stalk, it comes into direct contact with the chorion. The allantoic mesoderm spreads out on the inner surface of the chorion. Thus in the allantoic stage of the embryo the allantois is the chief agent of foetal circulation. Its blood vessels establish the circulatory system between the embryo and the maternal blood circulating in the decidua. From the maternal blood it receives the elements of nutrition and it carries off the effete materials.

The allantois may be divided into extra-embryonic and intra-embryonic parts. The extra-embryonyic is called by some the abdominal pedunclc. It is believed by many to be without a lumen. In this view it is a connecting mass of mesoderm functioning through the arteries and veins as aforesaid. The extra-embryonic part of the allantois develops into the *umbilical cord.*

The proximal part of the allantois forms the bladder: the remaining portion loses its tubular character and persists in the form of a fibrous cord called the *urachus,* stretching from the apex of the bladder to the umbilicus.

The umbilicus and the umbilical cord.—In the ventral body-wall of the embryo, there is an opening, through which originally the yolk-stalk and the allantois entered the column or body cavity. As the yolk and its stalk degenerate at the appearance of the allantois, so the allantois, the yolk-stalk, and mesodermal layers of the amnion, fuse to form the *umbilical cord.* Functionally the cord replaces the allantoic stalk. It connects the placenta with the embryo. The umbilicus appears about the end of the fifth week of pregnancy. In the latter stages of pregnancy its average length is about 24 inches. Normally this length permits ample free movement of the foetus in the amniotic fluid. Thus nature provides that the foetus shall exercise no dragging force upon the placenta. Abnormalities of the cord may occur. It may become wound around the neck of the foetus and strangle it. A loose coiling of the cord about any part of the foetus is not unusual and has no clinical importance; but a tight coil about the neck may cause strangulation. A tight coil about the extremities of the foetus may cause their atrophy or amputation. Coiling also may shorten the cord and interfere with the mechanism of labor. Thus a short cord may delay the second stage of labor by pulling back the foetus which the uterus labors to expel. The short cord may rupture or tear itself away from the placenta, causing asphyxia of the child. Moreover a short cord may tear the placenta from the uterus or cause inversion of the uterus. We speak elsewhere of anomalous insertion of the cord in the placenta.

About once in 400 cases the cord prolapses or falls down towards the vulva. It may even protrude. This is a serious condition of the foetus: compression on the cord impairs its important foetal functions and threatens the foetus' death by asphyxiation. The remedies are either replacement of the cord or immediate delivery.

In the case of an unviable live foetus there is but one lawful treatment, replacement of the cord.

Cases are recorded where there was no cord, the foetus being attached at its umbilicus to the placenta. Other cases of umbilical lengths of two or three inches are reported. The extreme length recorded, according to De Lee, is 78 inches.

The constituents of the umbilical cord are:

1. Two umbilical arteries (rarely one).
2. One umbilical vein (originally two, one of which becomes obliterated).
3. A remnant of the allantoic stalk.
4. A remnant of the vitelline duct.

These are all bound together by a soft, pulpy gelatinous, connective tissue called the *Jelly of Wharton.* This connective tissue constitutes the matrix of the cord. An ectodermic envelope ensheathes the cord.

Virchow and most authorities deny the presence of nerves in the cord: Kölliker and Valentine declare to have found them.

The umbilical cord is spiral; the spiral twists may sometimes be several hundreds. The etiology of this spiral quality has not been ascertained. The arteries are also twisted on themselves and twisted about the vein, which is itself twisted.

Mesoderm forms a large part of the cord. This mesoderm supports and connects the aforesaid constituent elements. The mesodermic cells form a reticulum, within whose meshes permeates the jelly of Wharton. At the placental end of the cord its mesodermic envelope is continuous with the amnion.

The arteries of the umbilical cord convey the impure blood from the foetus to the placenta. In the placenta it is purified and is conveyed back by the umbilical vein into the abdomen of the foetus to the umbilical fissure of the liver. The placenta performs for the foetus the functions of nutrition, respiration, and excretion.

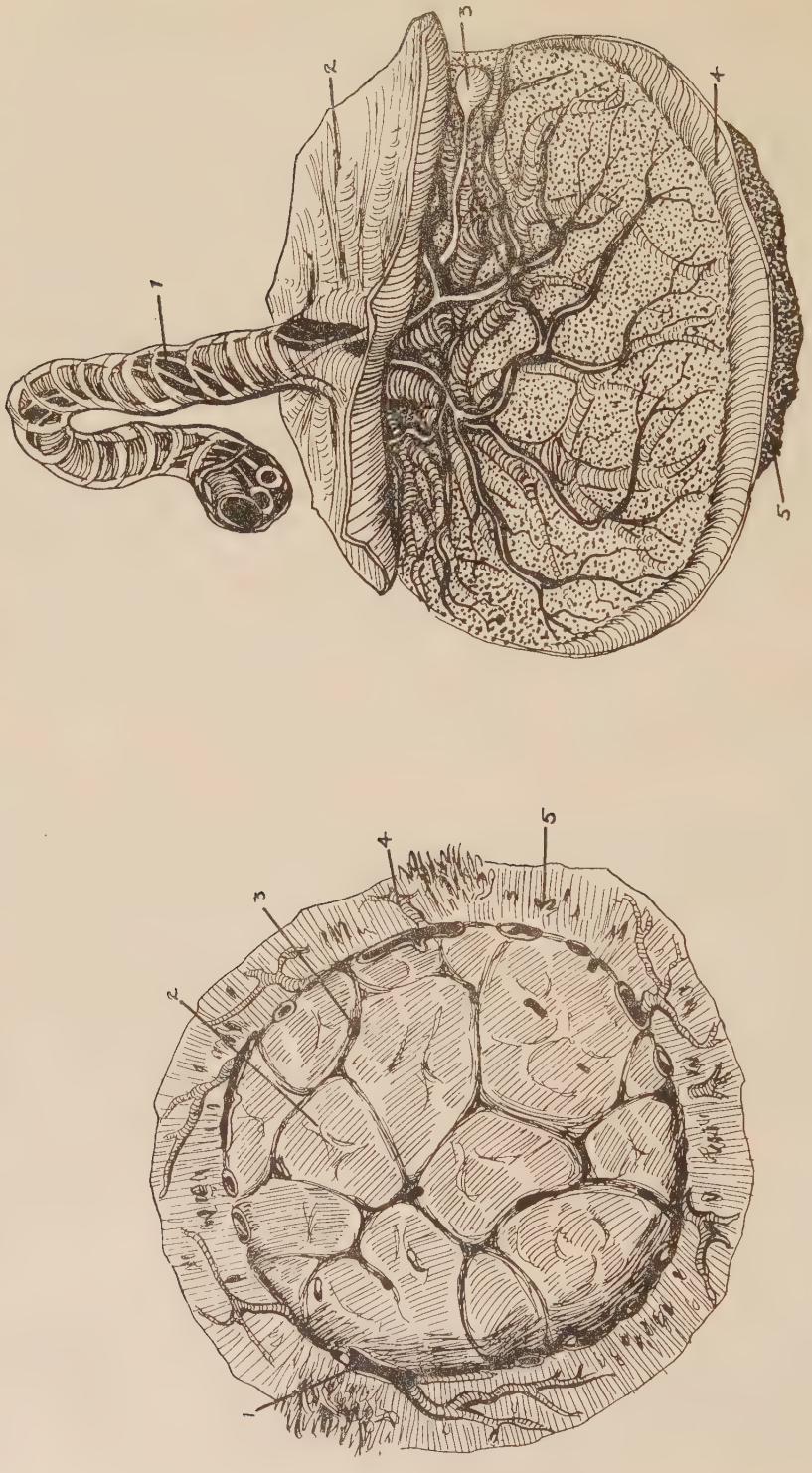
In rare cases the cord may become knotted and destroy the foetus by the impairment of these three vital functions.

The Placenta.—The *placenta*, so called from its resemblance to a flat cake, at full term has the form of a spongy discoid cake. Its average diameter is about seven inches; its thickness at centre about one and one-half inch; its circumference about twenty-three inches. It tapers from the center to the circumference. Its average weight is about twenty ounces. Placentas, however, are subject to great variations. During the last six months of intra-uterine foetal life, the placenta establishes a vital communication between the foetus and the maternal uterus. The function of the placenta is respiratory, nutritive, and excretory.

The placenta presents two surfaces,—foetal and uterine, or maternal.

The maternal or uterine surface of the placenta is irregularly convex. Septa divide this surface into numerous lobes called cotyledons: these are arborescent tufts of chorionic villi. It is derived from the deep part of the stratum compactum. The blood lacunae situated entirely within the maternal placenta are filled with maternal blood, by which the lobes or cotyledons are freely bathed. The arteries of the maternal part of the placenta are derived from the uterine and ovarian arteries. The maternal blood circulation and the foetal blood circulation come not into direct contact. The foetal circulation courses freely through the villi: the maternal blood bathes the syncytial coat of the villi and by osmosis an interchange is effected between the two circulations. This interchange is very important. In the placenta (1) the foetal blood is supplied with oxygen and deprived of carbon dioxide. When a pregnant woman dies the unborn child usually dies first: the mother uses up the oxygen needed for the child. In case of sudden death of the mother the child may live from five to twenty minutes. If there be cases where the child has survived the mother in her death by disease they are rare.

(2) In the placenta the foetal blood by osmosis receives from the maternal blood nutritive material; and (3) the foetal excretory products are removed from the foetal blood, which flows back into the foetus purified and furnished with oxygen and nutritive substance. We may represent the placenta as a disc securely adhering to the wall of the womb. Its ad-



A B

Fig. 81.

Fig. 81—PLACENTA.

Fig. A—Human Placenta Decidual Surface.

1. Marginal sinus.
2. Cotyledon.
3. Septa placentae with Aa. placentae.
4. V. decidual parietalis.
5. Decidua parietalis.

Fig. B—Human Placenta Amniotic Surface.

1. Cord.
2. Amnion.
3. Saccus vitellinus.
4. Membrana chorii.
5. Decidua basalis.

hering side is furnished with villi, blood lacunae, septa, sinuses, and arteries. The whole equipment contemplates the furnishing of all things necessary for the development of the foetus.

The foetal placenta and the maternal placenta firmly adhere. Some of the villi burrow deep into the decidua of which the maternal placenta is formed. Some villi even dip into the stratum spongiosum. The foetal and maternal placenta are thus firmly riveted by those deep burrowing villi, which are hence called *anchoring villi.* They are by some authors called *root villi.* Other villi project into the maternal blood lacunae and are copiously bathed in the maternal blood. Their syncytial outer coat aids in the osmosis by which the maternal blood through them and the umbilical cord is supplied to the foetus. In fact syncytium lines the *intervillous spaces* in which the maternal blood bathes the villi which lie free in the blood stream.

The foetal surface loosely covered by the amnion is smooth concave directly connected with the abdominal wall of the foetus by means of the umbilical cord.

The umbilical cord is usually attached to the placenta at its centre, but abnormalities exist. Abnormally it may be bilobate or trilobate. The lobe may be equal or unequal in size. The circumference may project in irregular projections. In addition to the main placenta there may exist accessory portions furnished with an artery and a vein. These are called placentae succenturiatae. If they have no blood vessels they are called placentae spuriae.

The clinical importance of placentae succenturiatae is to be noted. In the delivery of the afterbirth, if they be detached and left in the uterus they may cause hemorrhage and sepsis.

Sometimes the umbilical cord is attached to the margin of the placenta. From its fancied resemblance to the bat used in the game of shuttlecock this is called battledore placenta.

The placenta may be multilobed; it may be crescentic, resembling a horseshoe: this form is more liable to occur in twin pregnancy. It has no clinical importance.

A form of the placenta frequent in triple pregnancy, and often found in twin pregnancy is called placenta velamentosa. It may be considered as an aggravated form of placenta succenturiata. The placental extremity of the cord is attached to the foetal membranes at some distance from

the margin of the placenta. In this case the blood vessels of the cord must traverse a greater or less distance through the chorionic cavity to reach the body of the placenta. If this course brings the aforesaid vessels across the lower uterine segment, through which the foetus must pass, the child may die of hemorrhage from the rupture of one or more umbilical vessels when the amnion ruptures at birth; or the child may die of asphyxia from compression of the aforesaid vessels during the passage of the child.

The amnion and the portion of the chorion laeve which are expelled as the afterbirth are called the *membranes.*

If the diagnosis of placenta velamentosa is made before the amnion ruptures, the child may be saved, if the rupture of the amnion be delayed until the dilation of the cervix is complete. To accomplish this the woman is placed in the Sims' (Marion Sims, New York gynecologist, 1813-1883) position. The parturient woman is placed on her side (preferably her left side); the knees are drawn up, thus elevating the abdomen. The patient also inclines to lie partially upon her breast. The cervical canal of the uterus is then dilated by the accoucheur's fingers or by an inflatable bag, first invented by Carl von Braun (Viennese obstetrician, 1822-1891). The bag is called by some a colpeurynter, but more correctly by others, a metreurynter. It is very useful whenever it is advisable to dilate the cervical canal.

The operation in the case of placenta velamentosa is long, tedious and very dangerous. Much depends on as rapid a delivery as the state of the mother will allow.

A still more dangerous form of the placenta is *placenta praevia.* The normal site of attachment of the placenta is the posterior wall of the cavity of the uterus near the fundus uteri, but it may attach itself to any part of the interior of the uterus. In some cases it becomes attached over the entire os internum uteri. This is complete or central placenta praevia. If it covers only a part of the os internum the condition is partial or lateral placenta praevia. To be normal the placenta must be about four inches above the os internum.

If the lower edge of the placenta just reaches the margin of the os, it is called placenta marginalis. Sometimes the edge of the placenta dips down into the os internum establishing a condition called placenta cervicalis.

Hemorrhage in the last three months of pregnancy is the most reliable symptom of placenta praevia. Sometimes, however, no bleeding occurs until labor.

The prognosis of placenta praevia is unfavorable. Statistics collected by De Lee from various sources prove that of 2153 puerperae with placentae praeviae 166 (7.71 per cent.) died, and 61.44 per cent. of the infants died. The highest mortality is found in central placenta praevia.

Most of the deaths of the mothers in placenta praevia come from hemorrhage, sepsis, and rupture of the uterus. The infants die of asphyxia, foetal hemorrhage from tearing of the placenta, prematurity, and deliberate sacrifice of the life of the child to save the mother.

We shall say nothing of the methods approved by medical science which conflict with Catholic ethics. Our duty is to state what Catholic

ethics allow. The general principle covers the whole procedure that no action tending to destruction of the life of mother or child may be performed. In the application of this principle, it can not be urged that a life that in the course of nature surely must be destroyed may be sacrificed to save a life that may be saved. The unborn infant has the same right to life that any member of human society has. We shall speak later of the ethical principles governing the unborn child's right to life.

We may here examine a few applications of this general principle.

1. The accoucheur may through diagnosis discover that the placenta is upon the os uteri. If dangerous hemorrhage has not set in the proper method is to wait, keeping the woman under observation, in a maternity hospital, if possible. The objective of all efforts is the viability of the foetus. A six months' foetus is not viable. Under favorable circumstances it may imperfectly breathe, and may live for several hours, but no artificial means can supply the undeveloped state of the immature child's respiratory organs. If the foetus has reached the seventh month, and its further retention is seriously jeopardizing the mother's life it may be delivered by methods which safeguard the life of both mother and child. When an accoucheur acts with the intent to save these lives, and an accident chances, it is not chargeable to him. He ought to wait, if possible, until the twenty-seventh or twenty-eighth week.

De Lee (Principles and Practices of Obstetrics, p. 462) declares:

"With two exceptions every pregnancy complicated with placenta praevia should be terminated as soon as the diagnosis is made." The exceptions are (1) when the bleeding is slight; and (2) when the child is very near the border of viability.

Even in these exceptions, if the woman cannot be placed in a hospital or properly cared for in bed at home, he allows premature labor. This is squarely against Catholic ethics, founded on the principle: "Non sunt facienda mala, ut eveniant bona." The great error of medical science is to deny the intrauterine foetus the right that they give to the extrauterine foetus. Let us suppose by way of illustration that a new-born babe were such a carrier of contagious disease that its presence would cause certain death to many.

With cool indifference to the ethical law, De Lee (l. c.) declares:

"In the maternity hospital one should make a consistent effort to save the life of the child, but at the home one must use that method which will put an immediate stop to the hemorrhage, with, if necessary, less regard to the child. Also the accoucheur will select the procedure which he is best able to carry out, etc." Therefore the incompetent practitioner who is incapable of the Caesarean section will feel warranted in his crude work of destruction of the foetus.

It is self-evident that if the foetus be dead it may be extracted without regard to its mutilation.

The Caesarean Section.—There are three chief methods for delivering a child through placenta praevia. We may consider these methods in the case where viability of the foetus renders delivery lawful.

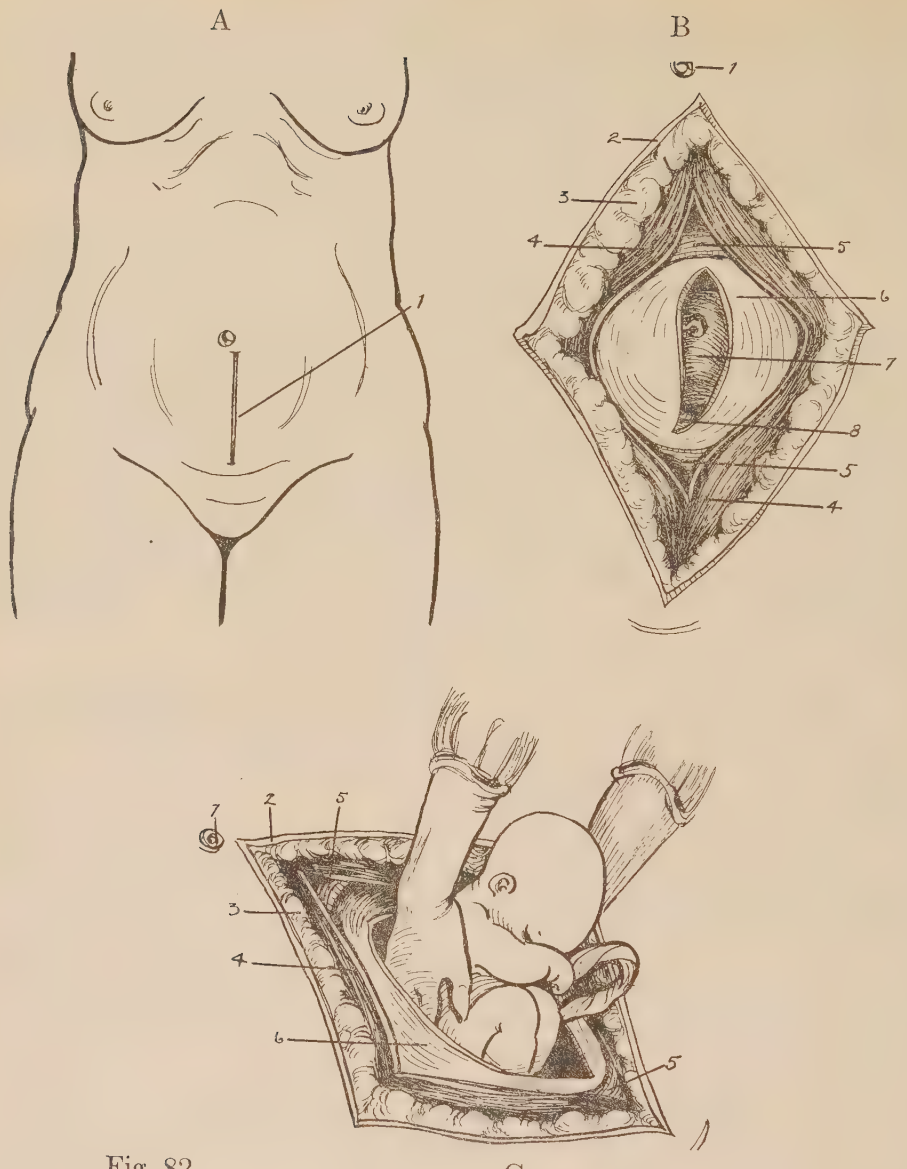


Fig. 82

The first and best method is the Caesarean section.

This operation is usually classed under the general head of laparotomy: it should more properly be classed under celiotomy, since the incision into the abdominal cavity does not enter the flank (Gr. lapara) but through the linea alba.

The linea alba is a tendinous raphé or mesial line extending down the front of the abdomen from the ensiform cartilage or lowest portion of the sternum to the symphysis pubis, to which it is attached.

Fig. 82—Three Steps in a Caesarian Operation.

Fig. A—Incision for low Caesarean.

Fig. B—Incision thru skin, fat, muscles, peritoneum, uterus and amnion.

1. Umbilicus.
2. Skin.
3. Fat.
4. Rectus abdominis muscle.
5. Peritoneum.
6. Uterus.
7. Child.
8. Amnion.

Fig. C—Delivery of child.

1. Umbilicus.
2. Skin.
3. Fat.
4. Rectus abdominis muscle.
5. Peritoneum.
6. Uterus.

It is placed between the inner borders of the recti muscles, and is formed by the blending of the apaneuroses or fasciae of the obliqui and transversales muscles. Owing to this arrangement of the muscles the linea alba is the best site for celiotomy.

The best time for Caesarean section after viability of the foetus is before labor has begun.

In olden times to avoid infection of the peritoneum the incision was made in the lowest accessible portion of the uterus. A six-inch incision is made just above the pubis through the parietal peritoneum. This is called the extra-peritoneal or transperitoneal method. This method is used by some accoucheurs at the present time.

The head is pulled up by inserting a finger into the child's mouth. The blades of the forceps gently clasp the head and by gentle traction deliver the child as in face presentation.

Some accoucheurs make the incision high above the navel.

It is scarcely necessary to speak of the old operation revived by Gaillard Thomas of Philadelphia in 1870, but since abandoned. This consisted in making an oblique incision above and parallel to Poupart's ligament, and delivering the child through the flank.

The more usual method is to make an incision about six inches long on the linea alba, passing a little to the left of the navel and extending about equally above and below it.

If the child be very large it may be necessary to enlarge the opening. The skillful operator will always keep the incision as small as possible: the larger the wound, the greater the strain on nature.

In order to cleanse and suture the womb it is not necessary that it be drawn out of the incision: the author witnessed a very successful Caesarean section wherein the womb was merely drawn to the edge of the incision. Surgical gauze was packed between the womb and the rim of the incision to prevent the blood, etc., from the womb from entering the peritoneum. It is better to open the womb as high up as possible as hemorrhage is more profuse from the cervix and parts adjacent.

One of the most important parts of the Caesarean section is the uterine suture. Three layers of sutures are necessary. All are of catgut.

The deepest layer of sutures closes the thicker muscular coat next to the mucous membrane of the uterus. The suturing should not invade the decidua. The next layer of sutures closes the middle muscular coat. The third tier of sutures takes in the uterine peritoneum and also catches a part of the thin muscular coat to which the peritoneum is attached.

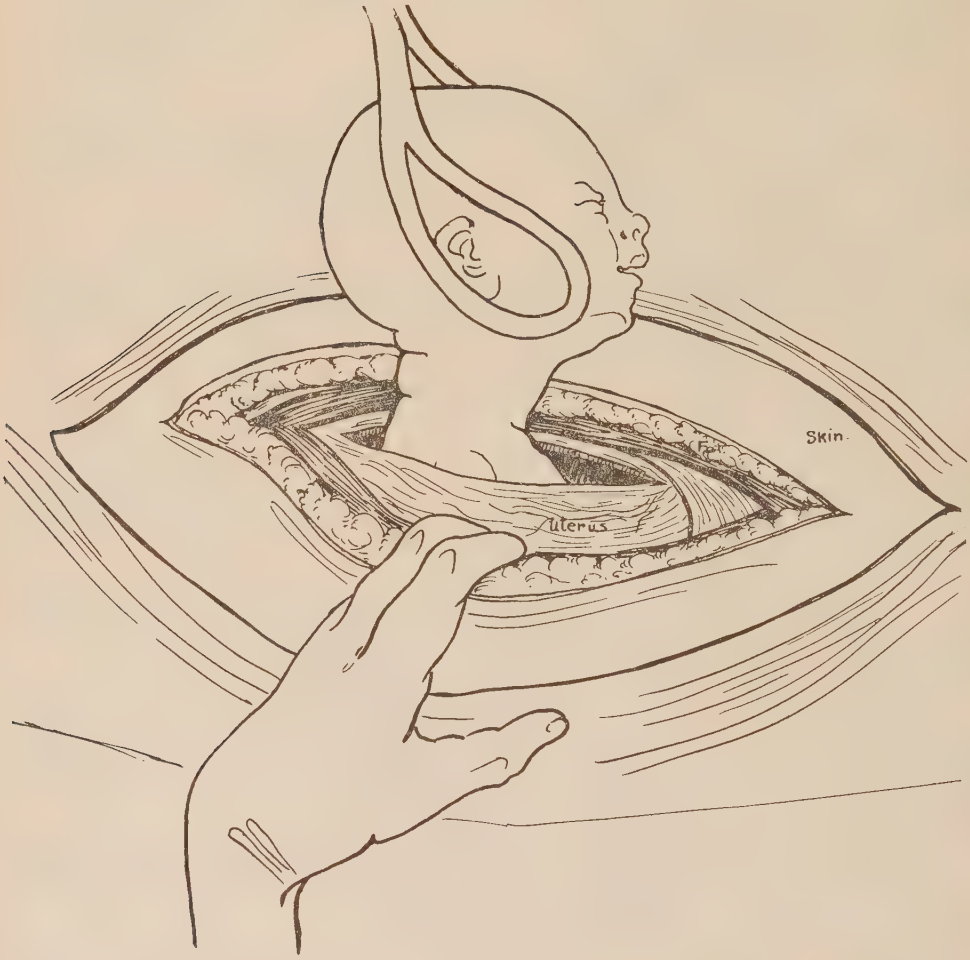


Fig. 83—Latzko's Extraperitoneal Caesarean Section.

Where possible ante-operative care of the patient includes much rest, care of bowels, regulated diet, judicious outdoor exercise, and cleanliness. On the day of operation an enema is given.

Preceding the operation the belly is shaved and washed with an antiseptic wash (hot water, green soap, bichloride of mercury and alcohol). A hypodermic of ergot is given and the woman is catheterized.

Pure ether is the best anaesthetic in this and all other operations where complete anaesthesia is necessary.

The belly wall is often thin, consequently care must be taken not to cut too deep. It is advisable to make a small incision with a scissors resting on two fingers inserted into the peritoneal cavity. The uterus is brought up to the abdominal incision and slit vertically about five inches. The incision must not immediately lay open the uterus. This would endanger the foetus. Cautiously and using the two fingers to guide the knife the cavity of the amnion is opened. Blood and the liquor amnii gushes out. By pressing the sides of the belly against the shrinking uterus the blood and amniotic fluid should be kept out of the peritoneum. It is evident that the accoucheur should have about four assistants.

There will be occasions in which the Caesarean section must be performed at once, without previous preparation of the woman; perhaps in the home, without professional aid; and without medical apparatus. In such cases the accoucheur must do the best that he can. De Lee (op. cit.) cites a case witnessed by Felkin in 1879 of a Caesarean section performed in Uganda. The operator washed his hands and the operative field with banana wine. The woman was made drunk with the aforesaid wine. A quick incision opened the uterus. The foetus was extracted. The cord was cut; the placenta removed; the uterus was massaged and cleansed of the membranes and blood; the woman was raised up in such manner that the peritoneal cavity was cleansed by drainage; the incision was sutured; and a paste of crushed herbs was placed upon it. The wound healed in eleven days.

In operating the Caesarean section skillful haste is of great value. As soon as the child is drawn from the uterus the umbilical cord is clamped in two places and cut. An assistant or nurse receives the baby on an aseptic blanket. The placenta usually is freely drawn from the uterus: the membranes are gently and completely pulled off the uterine wall.

In order to cleanse the uterus it is drawn to the edge of the incision. A large wet towel or laparotomy pad is placed over the wound under the uterus to catch the blood and to prevent the exit of intestines and omentum. The interior of the uterus is wiped thoroughly and freed of all shreds of placenta and membranes. Brisk kneading and firm compression aid in expelling the blood and secundines.

The womb is then sutured with catgut. It is replaced and the organs of the peritoneum arranged in their natural order. The suturing with three or four layers of sutures of the abdominal wall completes the operation. A more detailed description of the Caesarean section is not demanded here: the technic of the operation can not be adequately learned from a mere description.

A second Caesarean section is not made in the scar of the first, but parallel and close to it or in some other part of the belly.

In cases where the general condition of the woman is good and the operation is undertaken before the rupture of the amnion the mortality of the Caesarean section is very low. In 1910 Routh, cited by De Lee, collected 1282 cases in Great Britain, the mortality in favorable cases was between 2 and 4 per cent. In cases where labor had just begun the percentage of mortality was not increased; but in cases where labor had been

some time in progress with the membranes ruptured the mortality increased to 10.8 per cent. The mortality increased with the prolongation of labor, and if attempts at forceps-delivery had been vainly made, it reached 34 per cent. and more. The mortality of the infants from the operation itself should be zero.

Repeated Caesarean sections are frequent. In the ordinary course of events it is probable that a pregnancy following a Caesarean section must be delivered in the same way. De Lee (op. cit., p. 1020) cites a case of the sixth Caesarean section performed on the same woman.

To avoid the invasion of a scar it may at times be advisable to employ Dührssen's method (Der Vaginale Kaiserschnitt, Berlin, 1904).

In this method by episiotomy the wall of the birth canal is cut, the cervix of the uterus is slit, and the child is extracted by forceps. Of course, the vagina must be incised and reflected off the bladder. The bladder must be pushed upward off the anterior cervical wall.

With the present rigorous asepsis and advanced surgical skill the average mortality for all cases would not be more than 8 per cent. It is evident therefore that the Caesarean section is preferentially indicated in all cases where natural delivery is not possible; or is attended by danger of death of mother or child.

It must be borne in mind that in the Caesarean section it is advisable to insure a free passage through the cervix uteri for the escape of the *lochia* or vaginal discharge that has place for the first week or two after childbirth.

To avoid hemorrhage and infection in the Caesarean section Porro of Pavia in 1876 advised extirpation of the uterus, the Fallopian tubes and the ovaries. In present practice where the ovaries and tubes are healthy, only the diseased uterus is excised. When possible the body of the uterus is cut off above a ligature placed about one-half inch above the cervicovaginal junction. The stump is anchored in the lower angle of the abdominal wound.

At times the cervix also must be removed. The extent of the operation must be governed by the condition of the parts. This, of course, is the sterilization of the woman.

The ethics of sterilization is a leading question in medical science. Some authors lay down the principle that sterilization is lawful if the woman be afflicted with any disease which in itself contraindicates pregnancy, viz., tuberculosis, chronic nephritis, osteomalacia (softening of the bones), etc.

Another principle equally infamous is to leave it to the woman and her family whether she shall be sterilized.

Again, it is held by some that in the case where a recurring pregnancy may necessitate a third or fourth Caesarean section sterilization is lawful. Medical authorities more readily approve sterilization if the woman has several children.

There are different methods of sterilization: (1) exsection of a portion of the tubes; (2) ligation of the tubes; (3) ablation of the tubes; (4) extirpation of the uterus. If only a portion of the tubes be excised fecundity may be again established by opening the belly and anastomizing the cut ends.

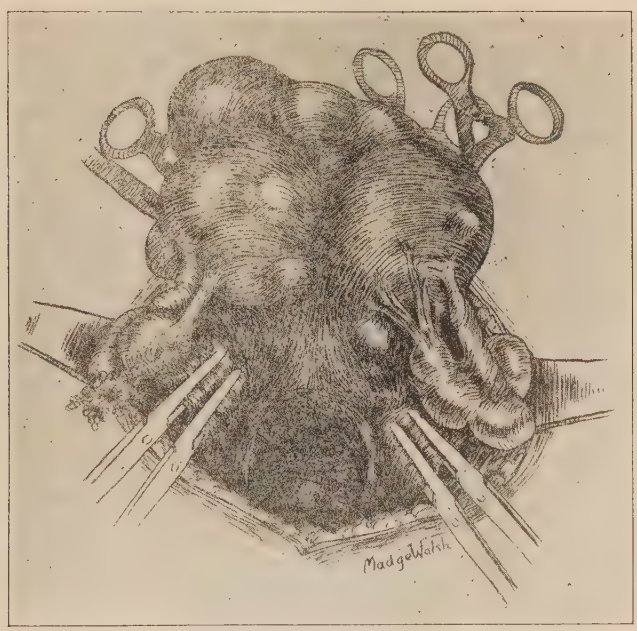


Fig. 84—Removal of a fibroid uterus with cysts on ovaries.

The moral law as infallibly promulgated by Catholic ethics forbids the sterilization of a human being save in the case where it is necessary to save the sterilized person's life. God's supreme right over life extends to the members of the human body. Man is not lord of his life nor of his members. The author of nature has endowed man's members with natural functions conformably to the plan of the universe. Man has no right to usurp the power of God over life and corporeal members. It is only therefore when a member becomes a menace to the safety of the body that it is lawful to remove it.

Myomata of the Uterus.—In the present case, if the womb or any other member of the body be diseased, to save the patient's life, it is lawful to remove it. Thus a myomatous womb, even though gravid, may be removed. To justify this operation it must be morally certain that the

woman cannot carry the foetus to viable term. It must also be certain that the myoma can not be dissected from the womb without destroying the womb.

It is evident that in the removal of a gravid myomatous uterus, the condition of the unborn child is not changed to the worse. An operation must not be rashly undertaken when a tumor is believed to be present. It is very difficult to diagnose an uterine tumor in a gravid woman. Many

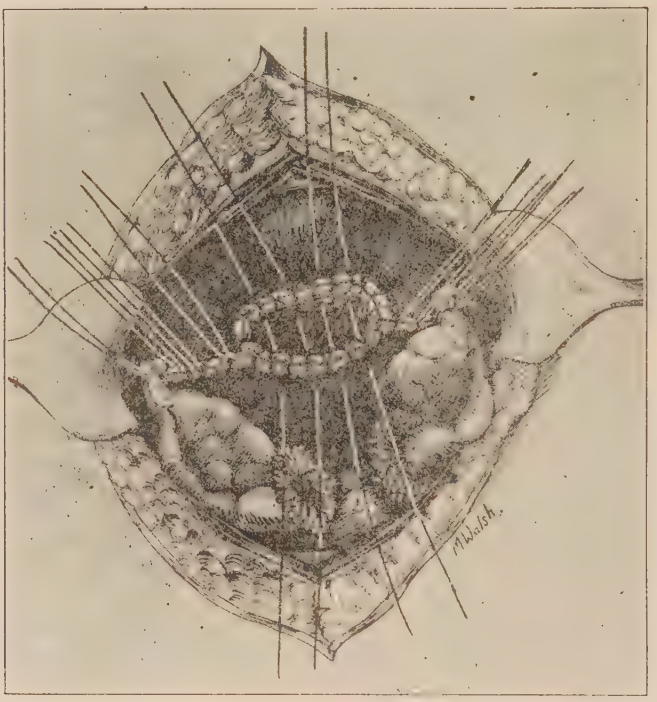


Fig. 85—Hysteromyomectomy.

mistakes have been made. A twin foetus has been mistaken for a tumor. Moreover, fibroid tumors as a rule do not seriously interfere with the course of pregnancy. In all such cases the accoucheur should follow a policy of watchful waiting. Known to the skillful physician are many ways of assisting nature that the woman may go to a viable term, or better still, to full term.

The synonyms myomata, fibromyomata, and fibroids mean the same, viz., tumours made up of muscular elements. They are firm bundles of fibers running in all directions. In most cases they can be shelled out from the surrounding muscle by the operation called myomectomy. Whenever possible this is preferable to hysterectomy.

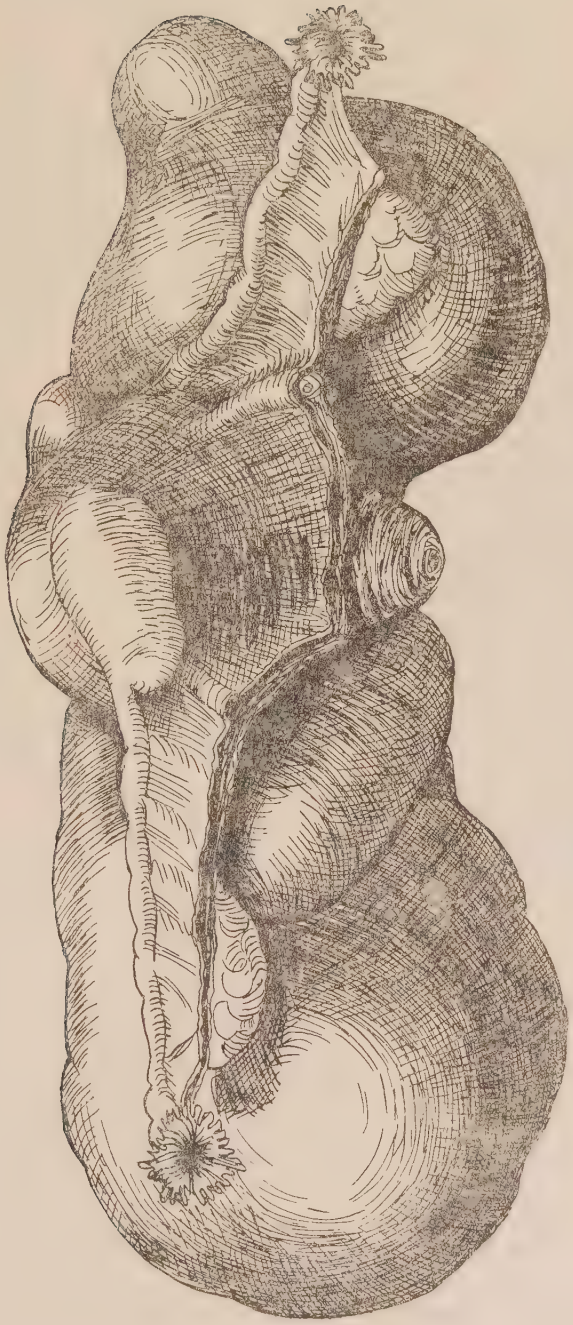


Fig. 86—A Myomatous Uterus Greatly Resembling a Fetus in its Contour.
(Kelly and Cullen)

The uterus may contain one or many: between 30 and 40 have been observed. The general average is from one to ten.

Myomata may be single or multiple: they may be situated in any part of the uterus or may occupy nearly all of the uterine muscle: they may be small or large. Sometimes they fill the entire cavity of the uterus.

Dr. Thos. S. Cullen of Johns Hopkins University in 1906 removed a myoma which weighed 89 pounds.

Parasitic myomata may receive their chief blood supply from the omentum or organ other than the uterus. They may be but feebly or not at all connected with the uterus. The presence or removal of these has no direct bearing on pregnancy.

A myomatous cervix is most opposed to normal labor. Generally it will so block the passage that normal labor is impossible. However, in such case myomectomy may be practiced, without harm to the pregnancy.

Dr. Howard A. Kelly and Dr. Thos. S. Cullen, both of Johns Hopkins University, in their "Myomata of the Uterus," p. 528, seqq., cite several cases of successful myomectomies of pregnant wombs, which interfered not with the normal course of the pregnancy.

Out of 296 myomectomies 16 of the women died,—a mortality of 5.4 per cent. Statistics are wanting to establish the foetal mortality in myomectomies of pregnant wombs. The vast majority of myomatous wombs are not pregnant.

Of great importance in pastoral medicine is an opinion of the aforesaid eminent specialists Drs. Cullen and Kelly, op. cit., pp. 538 and 539. They report a myomatous pregnant womb of a primipara.

"The patient had been married eleven years and had never been pregnant before. At operation a four months' pregnancy was detected. Numerous nodules studded the uterus. A myoma 7 cm. in diameter was removed and some difficulty was experienced in controlling the bleeding.

"Intestinal atony developed, undoubtedly favored by the pregnancy. Miscarriage followed, and the patient soon died. Infection certainly played a very minor role in this case.

"With our present knowledge we would not think of doing a myomectomy in such case. The abdomen would be closed at once, the pregnancy being allowed to go on to term, after which, if necessary, hysterectomy or myomectomy would be performed."

The presence of a myoma in the pregnant womb therefore does not justify an immediate hysterectomy or myomectomy: the pregnancy must be allowed to go to term if possible, even though the abdomen has been opened.

When the tumour is composed of glandular and muscular tissue it is called an adenomyoma. About 6 per cent. of myomata are adenomyomata. In these cases the hemorrhage is usually profuse and will undermine the patient's health. Supravaginal hysterectomy is usually necessary: the ovaries may be saved.

Many cases are on record of the removal of a tumor from the gravid uterus without destroying uterus or foetus. Abortion sometimes followed. It follows logically that every myomatous uterus is not to be removed.

Fig. 87—Sessile and Pedunculated Myomata. (Kelly and Cullen)

Every effort is to be made to save the uterus whether gravid or not. Myomectomy is to be preferred to hysterectomy when possible.

At or near full term two ways are open: (1) An attempt should be made to deliver the child by the natural mode by reposition of the tumor if it blocks the passage. (2) If this is impossible the Caesarean section is employed.

It would be criminal to remove the myomatous uterus for the reason that it has necessitated this difficult delivery: if myomectomy will save the uterus it is to be performed either then or at a later date.

The term *cancer* is loosely used to denote all malignant neoplasms, or new growths. The malignant growth may be myosarcoma, in which a sarcomatous change takes place in the myoma.

"The only hope of saving these patients' lives lies in a complete removal of the uterus." (Cullen & Kelly, op. cit.). It is often necessary to remove also the cervix to extirpate the ramifications of the malignant growth.

Both benign and malignant neoplasms may coexist. The malignant growths are sarcomata, in which the tumor is made up of tissue composed of closely packed cells embedded in a tissue. After removal they are liable to recur. A sarcomatous uterus should always be removed. But the term of viability of the foetus of a gravid sarcomatous uterus if possible must be awaited.

Carcinoma is commonly called cancer, thus named from the Greek term *karkinos,* a crab, a cancer. Carcinomata are made up mainly of epithelial cells with alveolar spaces of connective tissue, connecting with each other, and containing the epithelial cells. They originate in the skin, the mucous membranes and in the secreting glands.

The uterine cervix is the usual point of attack of cancer. Panhysterectomy is the only hope,—a faint hope.

Other pathologic conditions often accompany uterine myomata. When the submucous myoma, generally pedunculated, protrudes into the uterine cavity it is called a fleshy polypus.

"Uterine polypi are nothing more than portions of the mucosa that have been partially extruded and with the succeeding and frequent contractions of the uterus have been forced out into the cavity." (Cullen and Kelly, op. cit.). In their advanced development they may become cystic.

Out of 934 cases of myomatous uteri observed at Johns Hopkins School, the tubes were adherent in 426 cases. Hydrosalpinx was noted in 8 of the cases; hematosalpinx in 12 cases; salpingitis (usually bilateral) in 89 cases; tubo-ovarian abscesses in 14 cases; tubo-ovarian cysts in 5 cases; absence of left ovary with rudimentary left tube in 1 case; bilateral tuberculosis of Fallopian tubes in 14 cases; tubal pregnancies,—five ruptured and one intact—in 6 cases.

In 4 of the tubal pregnancies the surgeon was unaware of the presence of the ectopic foetus until the abdomen was opened. It is extremely difficult to make a differential diagnosis of an ectopic pregnancy.

In the 934 cases cited the ovaries were normal in only 438.

There were six unilateral ovarian abscesses; 184 cysts in various situations; 8 adenocarcinomata of the ovaries; 3 fibromata of the ovary, always

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unilateral; pathologically enlarged ovaries were found in two unilateral cases; in one case a myoma was merged into an ovary; there were 17 parovarian cysts. Uterine myomata also are often associated with pathologic conditions of the broad and round ligaments which support the uterus. Quite frequently the bladder is forced upward (rarely downward) by the myoma, causing difficult micturition: hypertrophy of the bladder often results.

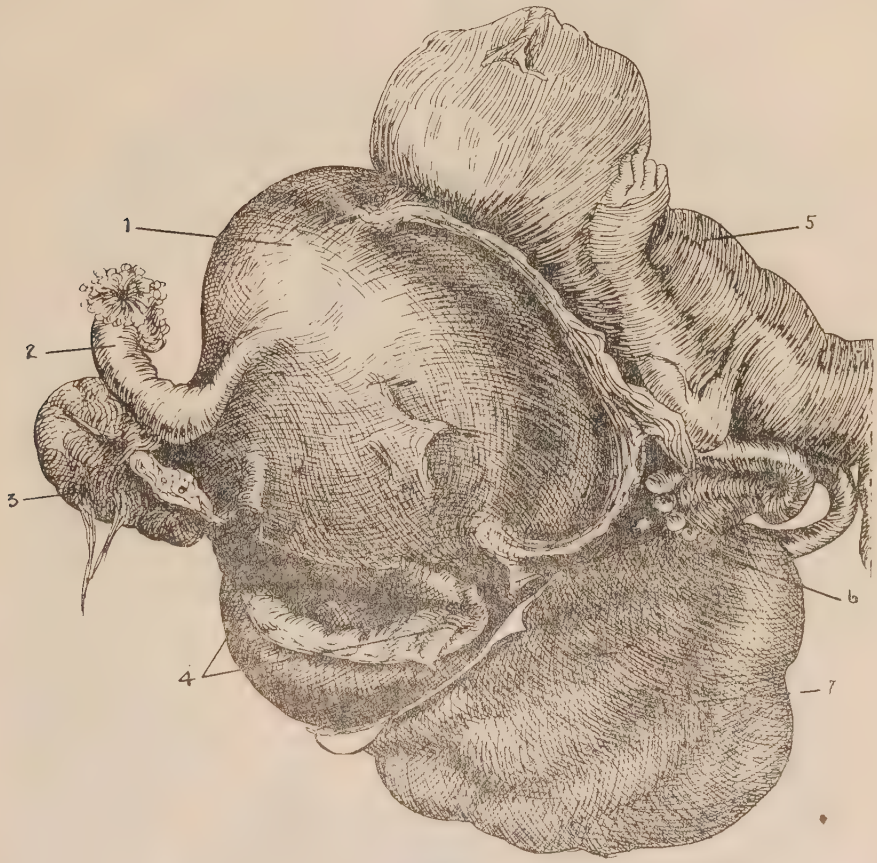

Fig. 88—A Ruptured Cornual Pregnancy. (Kelly and Cullen)

1. Right Cornu.
2. Right Tube.
3. Ovary.
4. Uterine attachment.
5. Fetus.
6. Fetal membrane.

"Subperitoneal or interstitial myomata, when not large enough to occasion any pressure symptoms, in the majority of cases cause little trouble, and consequently the patient rarely comes to the surgeon for treatment." (Cullen and Kelly, op. cit.).

The fifth decade of a woman's life is most liable to danger from uterine myomata. Most of these begin to develop during the child-bearing period.

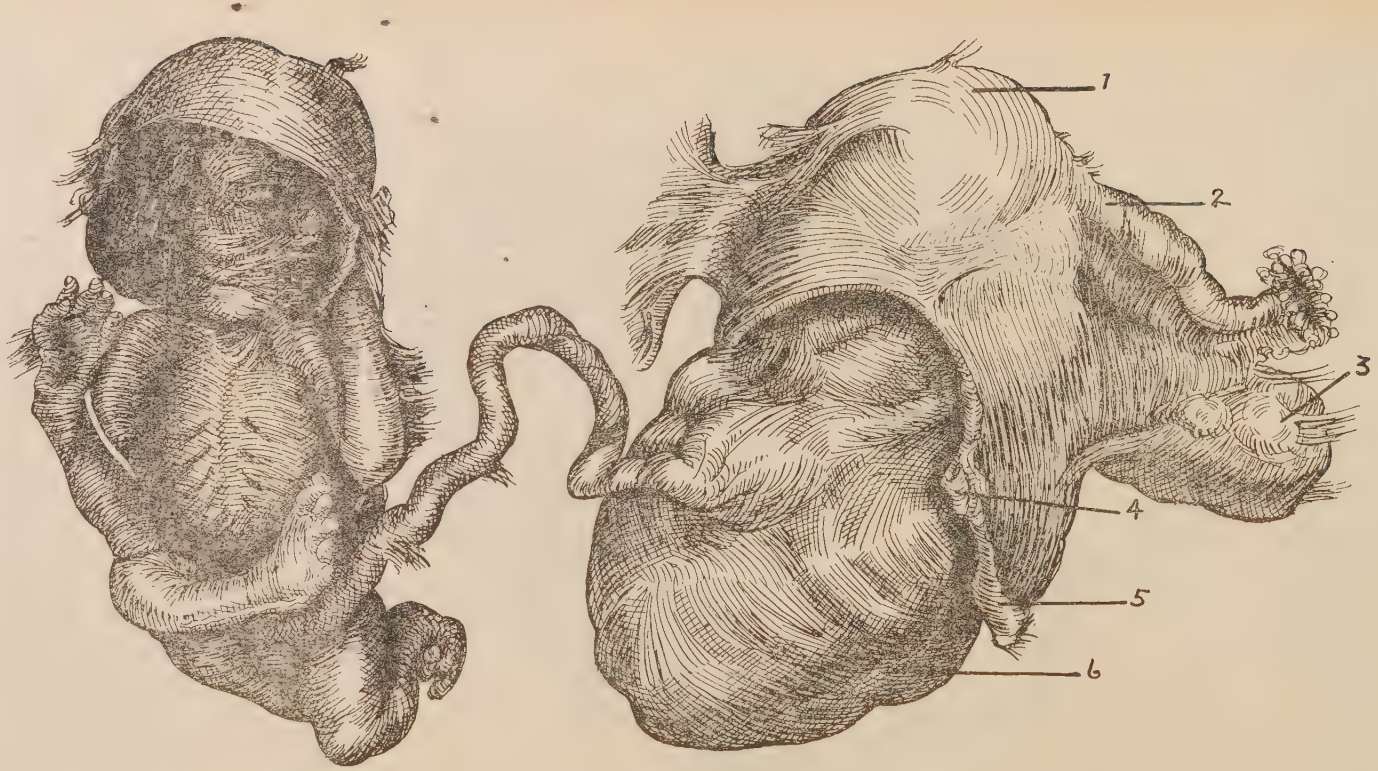

Fig. 89—A ruptured cornual or interstitial pregnancy simulating a myomatous uterus. The foetus was dead. (Kelly and Cullen)

1. Right Cornu.
2. Right Tube.
3. Ovary.
4. Fetal Membrane.
5. Atrophic Muscle.
6. Placenta.

The origin of myomata is unknown. Most myomata develop for several years before they compel operation. In 1307 cases of uterine myomata recorded at Johns Hopkins Hospital the highest number, 93, were found in women of forty years of age. No case was recorded before the age of nineteen; one was recorded at that age. After the age of fifty the ratio falls rapidly: one was found in a woman of 62; one in a woman of 71: from 28 to 52 are the dangerous years. However Johns Hopkins has a record of a shrunken myomatous uterus removed from a woman aged ninety.

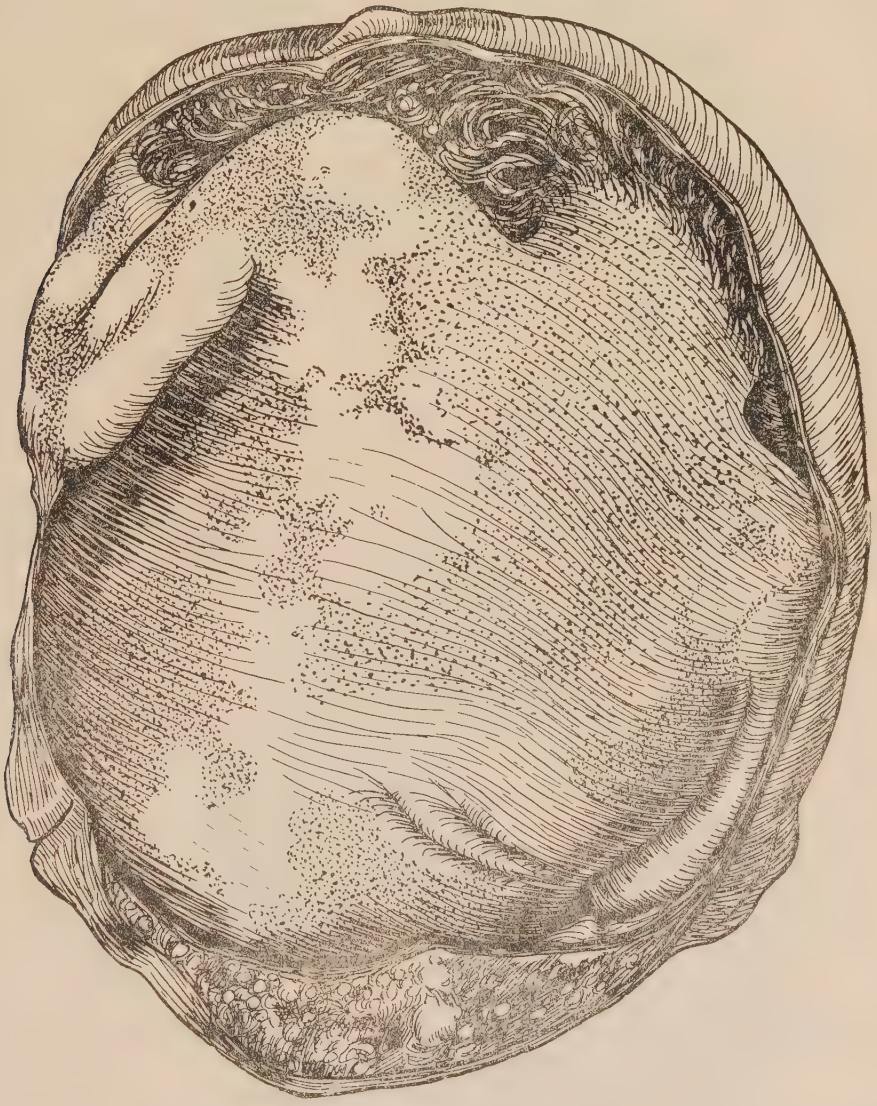

Fig. 90—A rare case of a suppurating dead foetus in a hardened womb, resembling a myoma. The liquor amnii is dried up: the womb is perforated, adhesive, purulent. (Kelly and Cullen)

The records of this hospital avouch that in 2729 autopsies, in which complete data are available 12.2 of the myomata were partially necrotic.

The rapidity of growth in myomata suffers great variation. Some grow rapidly for a period and then become quiescent; some develop gradually, and then increase rapidly. Some exist for from ten to thirty years. In case 10969 of the aforesaid hospital the myoma had been detected thirty-six years before.

Myomata, even though large, may not always be detected by observation of the external lines of the abdomen. When the myoma emerges into the abdomen, it changes the general symmetric lines, forming a dome-like elevation. "Increase in size of the abdominal veins, associated with myomata, is rare." (Cullen and Kelly, op. cit.)

According to Cullen and Kelly in the vast majority of cases the menstrual function is in no way influenced by the presence of myomata, and the flow may even be diminished. (op. cit.) When, however, the myomata encroach on the uterine mucosa there will be menorrhagia and a more or less intermenstrual hemorrhage. "Constipation is frequently associated with uterine myomata." (Cullen and Kelly, op. cit.)

It is proven that myomata render conception less liable and miscarriage more liable. From statistical data of Johns Hopkins Hospital in 1149 cases 842 were married; 307, single. There were 295 sterile married patients; 289 sterile unmarried. There were 240 miscarriages either before or at full term. The greatest number of miscarriages occurred during the second and third months. Three miscarriages were instrumentally induced; three were the result of a physical injury.

These statistics furnish proof that myomata cause sterility and miscarriages. Six of the cases tabulated had six miscarriages. The myoma may not always per se be the cause of the sterility, but it often causes it by resulting adhesions.

"At times the differentiation between myoma and pregnancy is clinically almost impossible, and even after the abdomen has been opened it is often difficult to decide whether the uterine enlargement is due to a myoma or pregnancy. The difficulty is especially apt to occur when the uterus is uniformly enlarged." (Cullen and Kelly, op. cit.). The data on which the differential diagnosis is based are the following:

1. The menstrual periods generally remain regular in cases of myoma; they generally cease in pregnancy. Menstruation may rarely have place throughout the period of gestation.
2. The breasts enlarge in pregnancy: myomata have no effect on the breasts.
3. In pregnancy there is a characteristic softness of the cervix.
4. After the sixteenth week the foetus is developed so that its presence may be detected by ballottement. Two fingers are introduced into the vagina up to the uterus and the foetus is gently pushed up into the fundus. The operator's other hand may feel the foetus strike the fundus. The fingers within the vagina may perceive the repercussion as the foetus falls back again upon the cervix. This sign is not certain. Cullen and Kelly record case 3387 in which myomatous nodules gave a distinct ballottement in bimanual palpation.

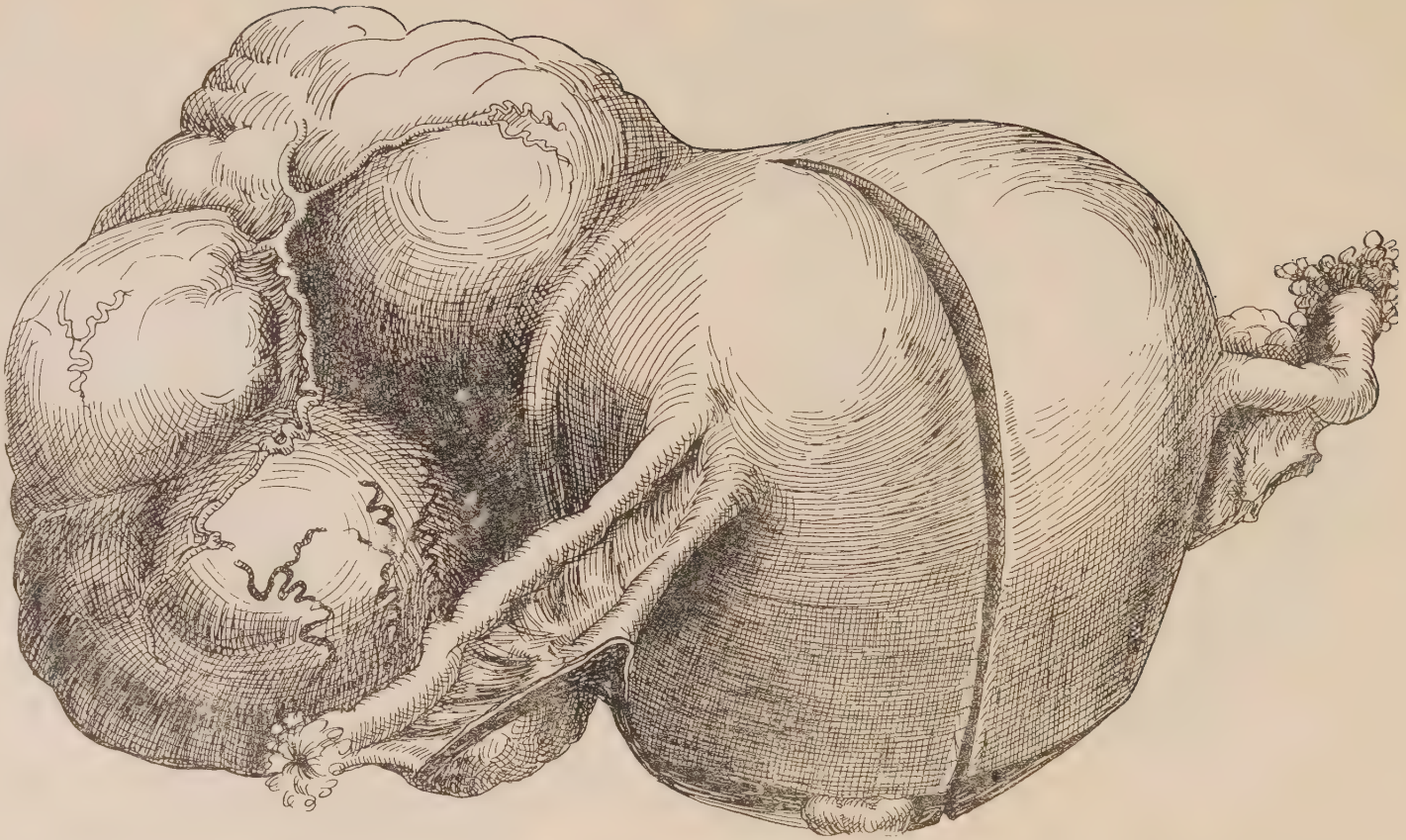

Fig. 91—A large Pedunculated Subperitoneal Myoma Complicating Pregnancy. (Kelly and Cullen)

With the best skill, therefore, a pregnant uterus may be mistaken for a myomatous uterus. However, such mistake is rarely unavoidable.

After the abdomen is opened and before the uterus is split, other signs are perceivable. A pregnant uterus is generally of a bluish hue; the vessels passing to and from the uterus are greatly enlarged and engorged. The myomatous uterus is generally of a pale pink color.

If all signs fail to establish certainty and the condition of the woman demands it the uterus may be carefully split. Of course, if a live foetus be found the uterus and abdomen must be carefully sutured, and the course of pregnancy allowed to go to term if possible. This case is merely academic for a woman who wishes to keep the law. A woman who has probable signs of pregnancy should not submit to celiotomy to explore for a possible myoma unless her life is endangered by what the best medical skill available believe to be a neoplasm. A gravid myomatous uterus may be removed without direct attack upon the foetus. The site of the foetus is changed and it is permitted to die. This is lawful only when the diseased uterus is a present lethal danger to the woman.

It has before been stated that myomectomy when possible is to be preferred to hysterectomy. It must be stated that myomectomy is generally the more difficult and more dangerous operation, when there are many myomata. During the childbearing period this greater danger of myomectomy is compensated by the hope of offspring. Therefore the spiritual counselor should always counsel myomectomy when possible before the menopause. Sometimes fifteen myomata have been enucleated without destroying the uterus. The highest number recorded at Johns Hopkins Hospital is case 10351; 28 myomata were enucleated: the patient died. In this case Cullen and Kelly declare that hysterectomy should have been done, although the patient was only thirty-five years of age. The splitting of the uterus to enucleate so many myomata greatly increases the risk.

After the menopause physicians consider that there is nothing to compensate for the greater risk in multiple myomata. They generally practice hysterectomy. The cessation of the menstrual function and of the child-bearing function lends some probability to this view; but owing to the effect of hysterectomy on the character of the woman, the organ should be saved even at some greater risk.

In former times the ovaries were sometimes removed to heal uterine tumors. There is no doubt that bilateral oöphorectomy has at times effected such healing. Owing, however, to the effect of such operation upon the woman's character it should only be resorted to in cases in which myomata must be controlled, and both myomectomy and hysterectomy are impossible. This will rarely have place.

"It is the surgeon's duty to save the pelvic organs whenever possible." (Cullen and Kelly, op. cit.) Even when hysterectomy is compelled, the best authorities advise to save any possible portion of the uterus.

"When a myoma complicates pregnancy, no operation is performed until after delivery, provided the myoma in no way obstructs the pelvis, so as to prevent delivery by the vagina." (Cullen and Kelly, op. cit.) In

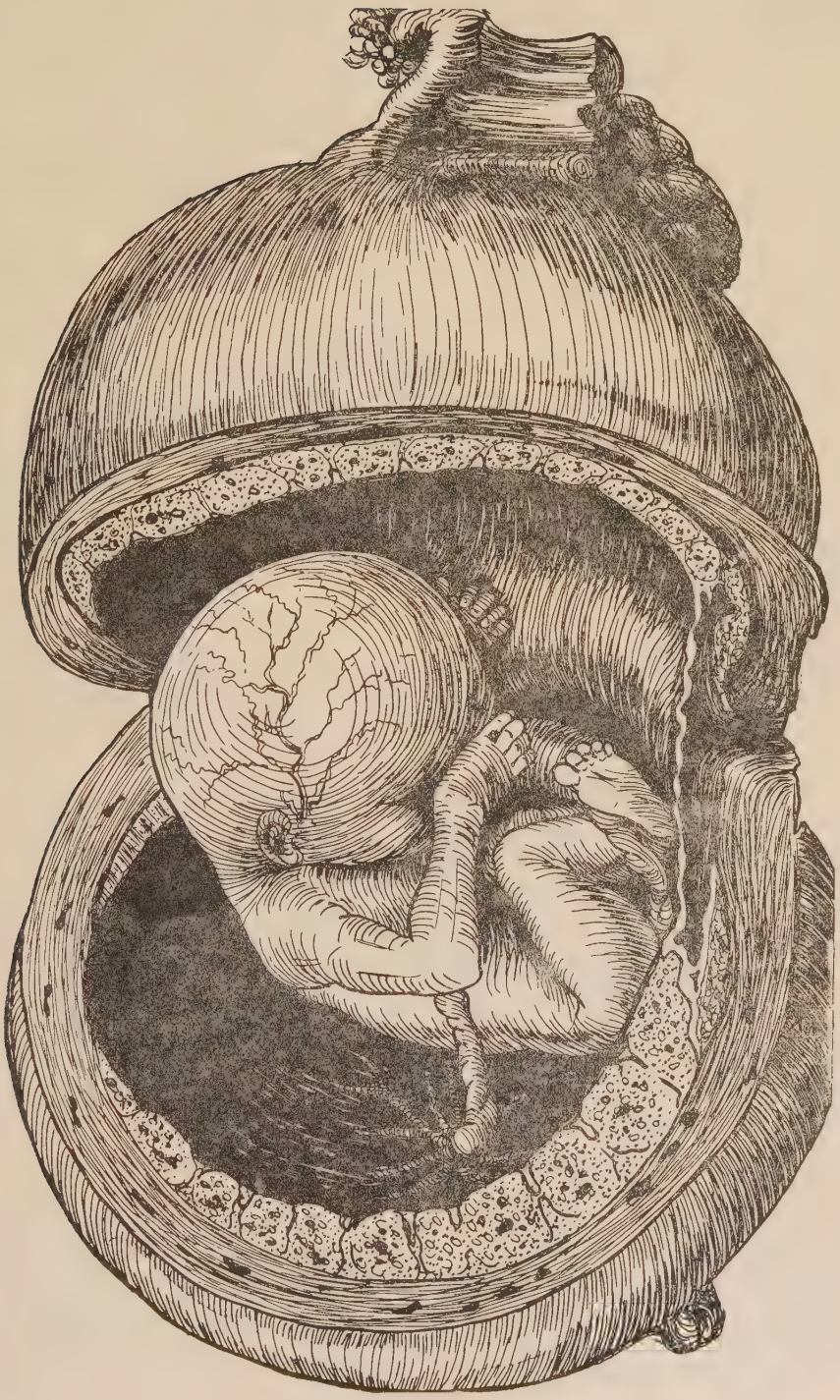

Fig. 92—A normal Pregnancy associated with a large subperitoneal myoma. (Kelly and Cullen)

case of such obstruction the eminent authorities by no means counsel to terminate the pregnancy. The choice of two operations is offered: either to shell out the myoma, and allow the pregnancy to go to term, or to await full term, and perform the Caesarean section. After delivery myomectomy or hysterectomy should be performed according to the exigencies of the case.

Often women have an undue dread of myomectomy. Certain statistics enable us to give them much encouragement. Cullen and Kelly report that in their 296 abdominal myomectomies, 280 patients recovered, and 16 died,—a mortality of only 5.4 per cent.

Six of the aforesaid myomectomies were complicated by pregnancy.

In case Gyn. 6508 an early pregnancy was complicated by two myomata. The woman was 35 years of age. Myomectomy was attempted, but owing to an uncontrollable hemorrhage the Porro operation was performed as the only means of saving the woman's life. The patient made a satisfactory recovery. In this case hysterectomy was fully lawful.

Case Gyn. 4990 the patient miscarried after myomectomy. She had had four previous miscarriages: she has never brought a child to term.

Case Gyn. 5018 also miscarried.

Three other cases, Gyn. 1249, 987, and 7985, went to full term after myomectomy and through normal labor bore living children, one of which weighed ten pounds.

In case 11110 after myomectomy the patient aborted on the fifth day and died on the sixth day.

In some cases an operated myomatous uterus develops within a few years a myomatous condition necessitating hysterectomy. It would not be ethical to remove a myomatous uterus to prevent a possible recurrence of the myomatous condition.

Myomectomy renders subsequent pregnancy less liable, but yet possible. To establish a calculation in this matter Cullen and Kelly (op. cit.) tabulated 94 cases of myomectomies of women within the child-bearing period, assuming 45 years as the terminus. Thirteen of the 94 subsequently became pregnant: twelve proceeded to term and one miscarried. Another patient died in the Caesarean section after prolonged labor in twin delivery. One of the patients bore four living children.

After abdominal myomectomy the majority of patients regain perfect health. Johns Hopkins Hospital made a survey of the subsequent state of health of 280 successful myomectomies. The periods ranged from a few months to sixteen years. In 137 cases the patients report themselves well; 3 are in fair condition. Eighteen are dead. But in most cases sickness and death are not due to uterine causes. Myomectomy has a good reputation.

The abdominal route is the most usual in myomectomies, but vaginal myomectomy is also employed. If the myoma lies in the vaginal canal, vaginal myomectomy is the operation of choice. Vaginal myomectomies are also sometimes performed on myomata of the submucous type. A small myoma may be extracted whole: a large one is cut in wedge-form slices and piecemeal removed.

Cullen and Kelly report 18 vaginal myomectomies.

A declaration of the aforesaid authorities is very valuable to the representative of Catholic ethics. After giving the histories of hysterectomies of four gravid uteri, and accelerated Caesarean section of one gravid uterus, they nobly declare:

"In one or two of our cases it would have been wiser had we watched the patient, for a few months at least.

"The aim in each case should be to effect a normal delivery at term, if that be possible, after which, if it be deemed necessary, the myomata or the uterus can be removed."

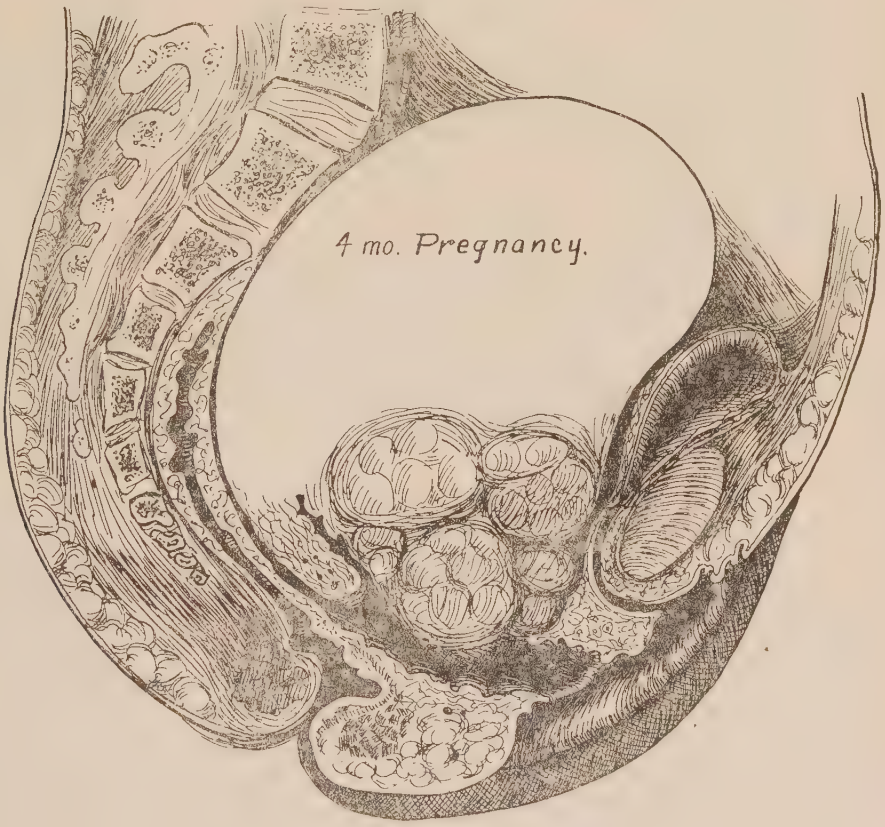

Fig. 93—Myoma of Cervix. (Kelly and Cullen)

Hysterectomy may also be operated by the vaginal route. It is indicated where there are no other abdominal pathologic conditions requiring celiotomy, and where the myomata are few and small. Recovery is more rapid. In 993 hysterectomies reported by Cullen and Kelly only 24 were by the vaginal route. As a general rule the abdominal removal recommends itself.

In all hysterectomies healthy ovaries should be saved if possible.

Much improvement has been effected in surgery in the last decade. From July 1, 1906, to Jan. 1, 1909, there were recorded at Johns Hopkins Hospital 3 abdominal myomectomies, 6 vaginal myomectomies, 192 abdominal hysteromyomectomies, 2 vaginal hysteromyomectomies. The total deaths in these 238 operations were 2, which occurred in the abdominal hysteromyomectomies. There were 8 cases which were not treated.

When a myomatous uterus is amputated through the cervix the operation is called hysteromyomectomy; in panhysterectomy the cervix also is removed.

Improved methods of surgery have reduced the operative mortality in aforesaid cases to less than one per cent.

Most malignant neoplasms are carcinomata: the term cancer includes also sarcomata.

The malignant neoplasm shows actively proliferating cells which invade surrounding structures. It is difficult completely to remove them: they show a marked tendency to recur. The cells of all malignant tumors extend between the aponeurotic layers; break through into the lymph channels and by proliferation cause the growth to appear in another place: this is called metastasis.

Carcinoma arising from glandular structures is called *adenocarcinoma*. A common form of this is adenocarcinoma of the breast.

"Cancer is divided into two main groups called by physicians 'carcinoma' and 'sarcoma.' These groups are then subdivided into many others which are recognizable only by the expert and therefore need not be considered here. Carcinoma is some ten times as frequent as sarcoma. The various kinds of cancer differ in their appearance, their methods of growth, and in their causation.

"In order to explain the nature of cancer it will be necessary to describe some of the normal structures of the body. As every one nowadays knows, our bodies are made up of cells. These are minute particles of various shapes and structure so small that they can be seen only under the microscope. Great masses of these cells collected together form the organs of the body. For example, the brain, liver, kidneys, heart, lungs, etc., are made up of different kinds of cells which form regular tissues and can be recognized as such under the microscope.

"The first minute cell or ovum divides and redivides, thus forming different kinds of cells which grow and develop special characteristics, and finally arrange themselves as the organs of the body. When the child is born all the billions of cells which compose the body are ready to perform the mysterious functions which are necessary to continue the life of the individual. So special is the development of some of them that they would hardly be recognized unless we knew their origin. For instance, it is difficult to think of the teeth or hair as being derived from the skin, yet both these structures are made up of cells modified from those which go to form the protecting surface of our bodies.

"In the healthy body all these cells remain throughout life where they were originally deposited, with the exception of the blood corpuscles

which circulate around in the vessels to carry oxygen and food, to remove waste products, or to fight germs. The others stay strictly within the boundaries of the region in which they were originally deposited and there carry on the work for which they were predetermined. So long as they stay in place and at work, the body remains perfectly healthy. When the cells stray from their normal boundaries and grow throughout the other tissues we have a cancer. The causes underlying the escape of the cells are but vaguely known. Enough has been learned by experiments on animals and study of human tumors, however, to show that the chief cause of the setting free of these cells from their normal restraints is chronic inflammation.

"Now inflammation is essentially merely the killing of a certain number of cells and their replacement by other cells. If a small, clean cut is made through the skin, hundreds of thousands of cells die from the injury, but immediately others begin to grow to replace those which have died. Thus, the space in the deeper tissues is filled up and then the surface-covering cells, called the epithelium, finally grow over the cut to form a new skin and thus heal the injury.

"When a bone is broken, blood is poured out at a point where the fracture has occurred, new bone and cartilage grows from the bone membranes, and a large block of bony tissue, called a callus, forms at the spot of the fracture. As time goes on the excess of this callus, which is larger than is necessary for a merely reparative job, is absorbed, until finally no trace of the fracture may be found. This is what we call normal repair.

"When, however, the skin of a man or an animal is irritated for a long time by coal-tar, for example, which causes the destruction of the cells, there is replacement of the cells killed by the poisonous action of the tar. But if these replaced cells are then again destroyed by the tar and replaced, and such irritation is continued for a long period, some of the cells may escape into the deeper tissues and instead of a harmless reparative process we have the development of a cancer.

"Such tar cancers, cited here as examples, are occasionally seen in human beings and are easily produced in some animals. The process is slow, however, requiring a good many years of irritation in man or a corresponding period of months in the shorter lived animals.

"The intimate nature of these changes which occur when repair ceases and the cells begin to run away we do not yet know. Apparently the cells of a cancer are not very different from the cells of the healthy tissues except in their ability to grow freely, and it is often impossible to tell the beginnings of a cancer except by microscopic examination of the diseased tissue. Such study reveals the fact that the cells have grown down from the skin to places where normal cells never penetrate. We then know that we are watching the beginning of a cancer. That some change must have taken place in these cells tho they may look like healthy ones, is shown by the fact that if we transplant healthy skin into the deeper tissues either in man or animal such healthy skin is quickly destroyed by the tissues of the body and no cancer is produced.

"Apparently there has to be a long preparatory period of inflammatory growth in order that this cancerous change in the cells may take

place. Nevertheless the cancer cell is so little changed that the body not only does not recognize it as a foreign creature but welcomes it and feeds it with its best. That its nature is but little changed may be seen when a particle from a cancer of the liver escapes from the main growth and is carried to a man's brain (metastasizes is the technical word) and there forms a miniature liver which secretes bile and ferments just as if it were a normal liver.

"A single blow or injury never causes cancer so far as we know, because following such injury normal repair occurs. Broken bones, cuts, scratches or blows, such as an average child receives in plenty never result in the production of cancer." (Francis C. Wood, M. D.)

"Cancer is becoming a real menace in our population. Each year approximately 66,000 women and 33,000 men die from this disease in the United States. In other words, one woman in every eight and one man in every 14 who reach the age of 40 years will die of some form of cancer.

"All the studies made on cancer reveal that the earlier the diagnosis is made the surer is the removal either by surgery or by X-ray or radium. In other cities of the country where efforts have been made to carry on a propaganda against cancer among the medical profession and the laity, there has resulted reduction in the mortality and consequently the prolonged suffering which cancer often produces. Some states, especially Massachusetts, have appropriated special funds to carry on the campaign.

"Many of the old ideas about cancer have been shown to be wrong. It is not a disease to be ashamed of and covered up. We know that it is not catching even when the closest contact takes place between a cancer and a non-cancer patient. We know that it is curable in the great majority of cases, if diagnosed early and treated early. Salves and pastes not only do not help but they actually do harm. No advertised cure ever cured a true cancer. All lumps and ulcers are not cancer, but some are. It is most vital to know which are cancer and which are not.

"Many forms of cancer of the internal organs are most difficult to diagnose and require the assistance of all modern methods of diagnosis." (Dr. Louis M. Warfield)

Of cancer, it may be truthfully said that there is no expectant treatment. Nevertheless a gravid cancerous uterus should be allowed to go to viability if possible. Other cancers should be treated at once.

"In the last 20 years we have been doing our best to teach the public the importance of early diagnosis of tumors. Formerly, patients came to us much more frequently than they do today with evidences of malignant cancer. They often suffered from very large tumors, thoroughly developed growths, for which we could do little. At best, we could but check the spread of the disease. But death within a short time was certain.

"Many of the patients might have been spared if physicians had been given opportunity to treat them earlier." (Dr. W. C. MacCarty, pathologist at the Mayo clinic at Rochester, Minn.)

Cancer death-rate is increasing. According to Dr. Frederick L. Hoffman, consulting statistician of the Prudential Life Insurance company, this increase is due to the "profound alterations in our modern mode of living as compared or contrasted with the more natural mode of living in

former years."

The rate in twenty-three American cities increased from 74.5 per 100,000 in 1906 to 92.3 per 100,000 in 1916 and 114.5 per 100,000 in 1926.

To the cancer victim, Dr. Henry J. Ullman of Santa Barbara, Calif., brings hope in the form of experiments combining the standard X-ray treatment of cancers with injections of a new lead compound. In England the Blair-Bell treatment of cancer by colloidal lead has been reported as somewhat successful. Dr. Ullman uses a phosphate compound of lead which he believes weakens the malignant cells of cancer and allows the X-rays to be more effective. This lead compound has the advantage of being stable and less poisonous than those used in England, but Dr. Ullman emphasized the necessity of further experimentation upon animals and great care in human applications.

It must be candidly admitted that cancer still baffles the medical world. Its death-toll constantly mounts in the United States. It is estimated that the yearly cancer death rate is 125,000.

In the light of modern medical knowledge, cancer appears to be a more complex problem than ever, and it is extremely doubtful if any single causative factor or any single curative factor will solve the questions of the triangle. A specific remedy for generalized cancer seems just as remote as all of the promulgated nonsensical fads and foibles concerning diet and habits. Until the biologist, the chemist and the pathologist can successfully wrest from nature the basic cause for cancer and until the role of heredity can be understood we are compelled to continue on in the use of those remedies or agents which have proved, by the test of time, to be the most effective in the greatest number of cases, and these agents are surgery, X-rays and radium.

"In women cancer of the womb is, next to that of the stomach, the most frequent type of the disease. In 1920, 9,848 cases were recorded in the Registration Area, or about 12,000 for the entire country.

"Of two types, that of the cervix or neck of the womb attacks chiefly women who have borne children. The other form, involving the interior of the organ, is seen in both those who have borne children and those who have not; it is much less serious, as it is curable in a high percentage of the cases by surgery. Cervix cancer, the most frequent type, owing to its situation, early involves the bowel and bladder causing a great deal of physical suffering. It is therefore especially important that women learn to recognize the very obvious symptoms of this disease.

"The first and most frequent symptom is blood or a blood-tinged watery discharge appearing between the periods. Such a symptom is quite sufficient evidence to warrant a woman consulting a specialist immediately. It is obvious that such bleeding may also be due to other conditions, as a fibroid tumor or irregularities of menstruation or the changes in flowing which occur at the beginning of the menopause. But the only way to settle the question is to have a careful physical examination with a direct ocular examination of the neck of the womb. If necessary, a small fragment of tissue should be removed for microscopic examination. This can often be done without an anesthetic.

"In the later stages the discharge continues bloody but may become very offensive. Even if no blood is present, a malodorous discharge warrants an examination. Pain is a late symptom and may be referred to the bladder or the rectum or may radiate down the legs. This indicates invasion of the walls of the bladder or rectum or pressure on the nerves in the pelvic region and indicates, therefore, advanced and hopeless cancer.

"While splendid results follow the treatment of early cases either by surgery or radiation, in general the treatment of cancer of the womb is, at the present time, in a very unsatisfactory condition because very few women come sufficiently early. Among the more intelligent classes we rarely find more than one cancer in ten of this type which is suitable for operation. Among women of the laboring class it is rare ever to see a case early enough to permit of an operative cure. In this dilemma the only recourse is radium or X-ray. Proper radiation treatment is peculiarly effective and there are now on record a number of inoperable cases which have gone from three to five years without return of the growth, following radiation treatment only." (Francis C. Wood, M. D.)

Carcinoma of the genitals or breasts of women is rare in women under thirty-five: its commonest period is between forty and fifty-five. Consequently we find few carcinomata in the child-bearing period. Some authorities give the ratio as 1 to 2000.

Medical and radial treatment are still in the experimental stage. They should always be employed in the case of an immature gravid uterus, where any reasonable hope may be founded on them. Most physicians believe that early operation is the only proper treatment of cancer. Lymphatic metastasis begins very early. It is well that carcinoma of a gravid uterus is extremely rare. When a competent physician finds such a case, where palliative treatment will not ensure a viable foetus, he is justified in removing the uterus at once. As in the case of other myomata the condition of the child is not changed to the worse. Both mother and foetus in the premises will die if the delivery be not made. By extirpation of the womb the foetus may be validly baptized.

In every case where a womb has been extracted without rupture of the membranes, the amnion in the extracted womb is to be carefully opened that the baptismal water may flow upon the foetus.

A case may exist in which the carcinoma of the uterus may allow a full term delivery, but by this interval render the prognosis as to the life of the mother less favorable. The carcinoma has had time to progress; and the progress is usually rapid. In such case there may be authorities who would approve immediate excision of the uterus. It seems to the author that extirpation of the uterus in such case be unlawful. The death of the foetus would be certain; the acceleration of the death of the woman is not certain. The right to life of the child is certain: a certain right is not eliminated by a probability. The woman can not plead that she is excising a member that threatens her life. Such excision is indirectly surely destructive of the foetus. It is undertaken to free the woman from an aggravation of her disease and from a probable shortening of her term of life. There is a disproportion here. The causality of the evil threaten-

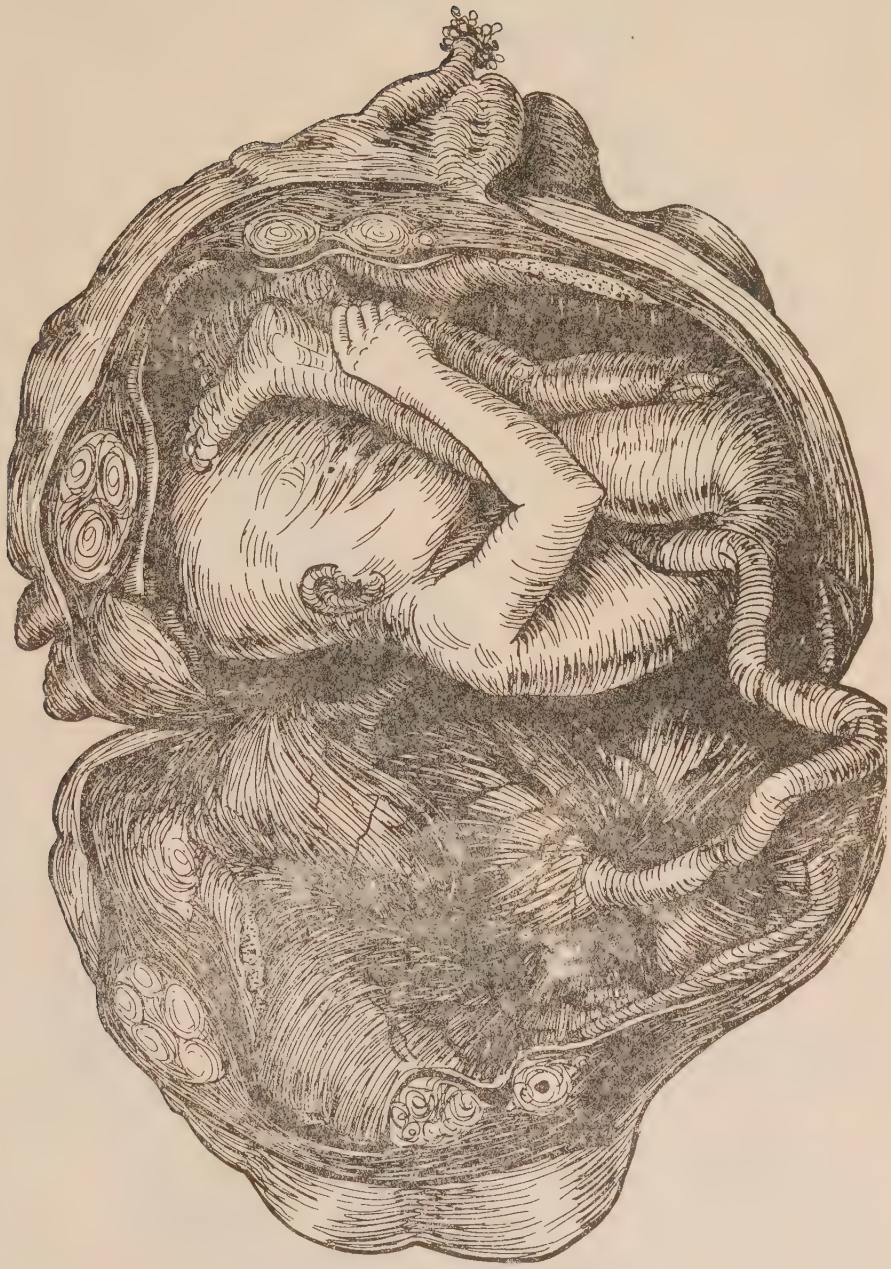

Fig. 94—Pregnancy in a Multinodular Myomatous Uterus. (Kelly and Cullen)

ing the woman is by no means equal to the causality of the act which deprives the foetus of life. It seems therefore that in such cases the state of viability of the foetus should be awaited. Of course if the state of the woman should change to the worse so that present death is imminent, hysterectomy may be performed.

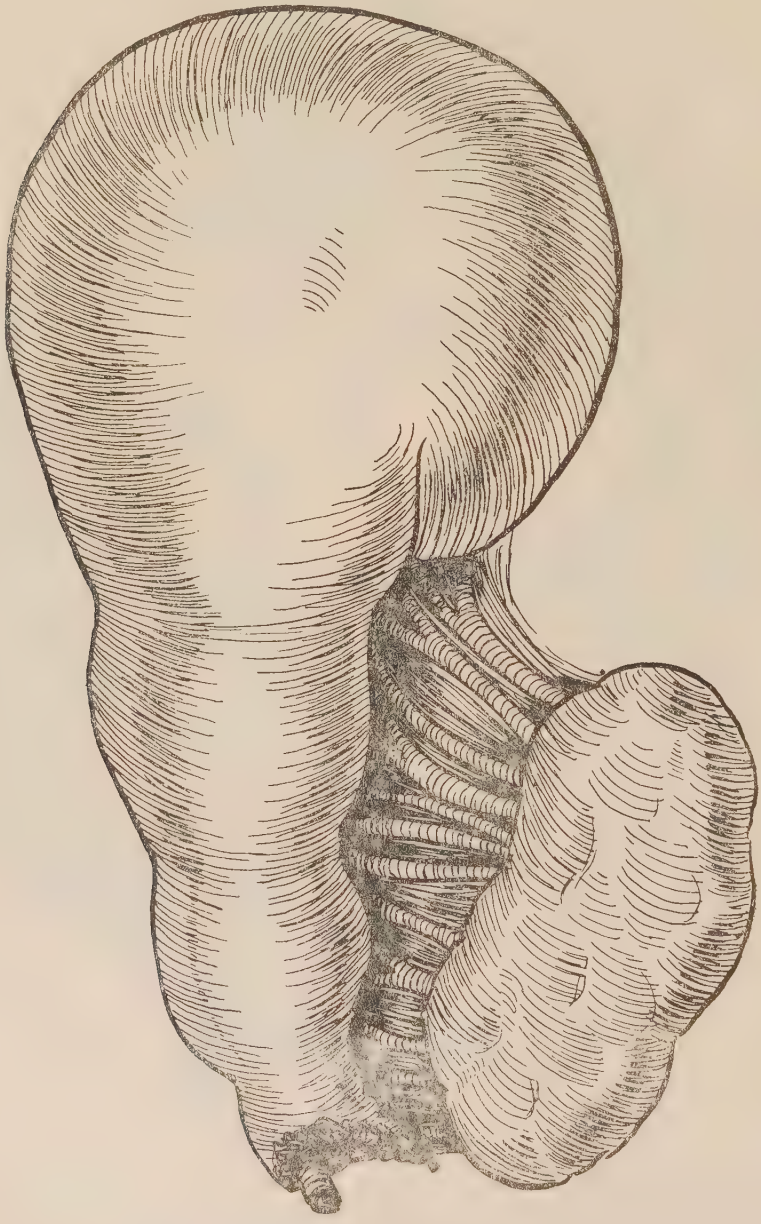

Fig. 95—Hydrosalpinx. (Lewis and de Roulet)

Should the carcinoma be discovered when the child is near viability it is certainly of obligation to wait. As the state of viability arrives the Caesarean section is recommended, followed by extirpation of the uterus. In cases of inoperable carcinoma of the uterus all authorities agree to allow the woman to go to full term.

In case of cysts of the ovaries or other uro-genital organs it is usually possible to await the delivery of the pregnant woman before removing the cyst.

The stem of the tumor by which it attaches itself to the organ of its origin may become twisted. This establishes the state called *torsion of the pedicle*. This is very liable to occur in tumors of moderate size: the very small tumors and the very large ones are not liable to twist.

At first the torsion brings no serious consequences. As it arrives at an acute stage the blood is shut off and venous stasis of the tumor ensues. Edema, necrosis, and infection would follow. The cyst may also rupture. In cases where it is prudently judged that the tumor of a gravid woman must be removed before she reaches full term, the operation is lawful, since it does not necessarily threaten the life of the foetus. A minor operation may be done at any time, but celiotomy should be deferred until the viability of the foetus if possible, since abortion follows it in from 17 to 22 per cent. of the operations.

Rare cases are found of torsion of the cervix or of the body of myomatous wombs. Prof. Bastianelli of Rome reported a case where torsion had effected complete severance of the body of the uterus from the cervix. There are several cases recorded in which the myomata formed solid calcareous tumors.

"Uterine myomata occur with extraordinary frequency." (Graves)

About 12 per cent. of white and 30 per cent. of colored women of fifty years of age have uterine myomata. Fifty per cent. of colored women of thirty-five years who have not borne children have such tumors." (W. J. Mayo)

The majority of the tumors give no trouble. Those that cause trouble usually develop to the trouble stage in the seventh septenniad. It is probable that no new tumors begin after the menopause. The growth of many others ceases or greatly diminishes as the uterine blood supply is limited by the menopause.

Menorrhagia and the shortening of the intermenstrual periods are among the chief ill effects of uterine myomata. The continued bleeding may compel a myomectomy to save the patient from the deleterious effects of the loss of blood.

When the bleeding has place in the period shortly preceding the menopause it may be possible by pituitrin, ergot, hydrastis, hamamelis, X-ray, radium to tide the patient over the menopause in the hope that the tumor may atrophy.

Radiation of a dosage sufficient to retard the myomatous growth will accelerate the menopause; hence during the child-bearing period it should not be employed in cases in which myomectomy may save the womb. Radium will seldom be indicated save in cases of moderate sized myomata

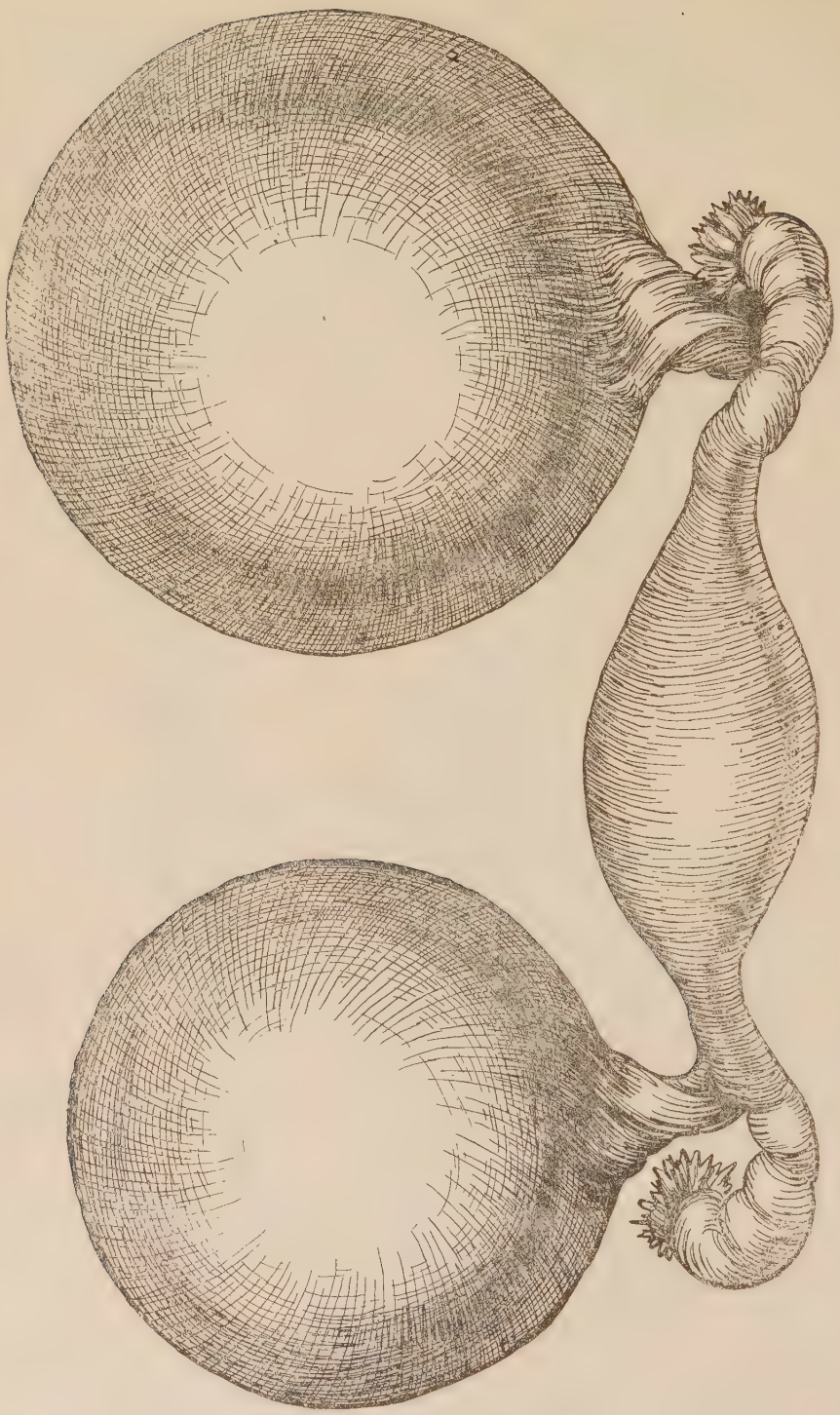

Fig. 96—Torsion of pedicle in bilateral ovarian cysts. (Lewis and de Roulet)

in women who are approaching the menopause. Large tumors and all tumors which are degenerating into malignancy should be at once removed. Complicating malignancy is present in at least ten per cent. of myomata and 30 per cent. of surgical myomata bring with them surgical diseases of the ovaries and tubes.

Histologically the mole differs nowise from physiological foetal tissue. Neither is it possible to determine whether the overgrowth be benign or malignant. Simple hydatid mole or chorioma benignum may degenerate into chorio-epithelioma which is malignant.

Emil Novak declares that chorio-epithelioma malignum follows hydatid mole in a small fraction of one per cent. The presence of chorio-epithelioma malignum is a sufficient reason for removal of the uterus, even though gravid, unless viability of the foetus may be awaited without grave danger of the woman's life. Hysterectomy may be performed after delivery, if viability has been awaited.

Guided by the sound surgical and moral principle that the pelvic organs must be saved whenever possible, the spiritual physician must be well informed of the conditions which demand the resection of the generative organs. For this cause we are somewhat diffuse in treating of new growths.

We have seen that the chorionic villus is furnished with an outer layer of epithelium which is called syncytium, and with an inner layer called the *layer of Langhans.* The arrangement of the cells in the two layers is different. The syncytium is a continuous mass of darkly staining protoplasm, with no definite cell boundaries. Langhans' layer consists of large bright epithelial cells with well-marked boundaries: its nuclei stain weakly. Both layers are of foetal origin.

"Both layers in the normal placenta have a tendency to proliferate and grow outward into the space between the chorionic villi." (Graves)

"We know that syncytium has invasive power, that the villi erode their way into the uterine wall, into the blood vessels, but what keeps this in normal limits and what permits the growth of the cells to pass all bounds can not even be conjectured." (De Lee)

When the proliferation of one or both of these layers passes physiologic bounds the overgrowth becomes pathologic. It may take the form of hydatid mole in which the degenerated chorion resembles a bunch of grapes. These grape-like processes are usually of the size of a pea: rarely have specimens been found as large as a hen's egg.

Hydatid moles are often spontaneously expelled. They are often associated with abortions. In some cases the dead foetus is absorbed before the expulsion.

"It is quite certain that thorough evacuation of the uterus will cure hydatidiform moles in the majority of cases." (Emil Novak quoted by Graves). It would be criminal therefore to resect the uterus because of the presence of a hydatid mole. The case of therapeutic abortion in the case of moles is ethically difficult. The mole may produce pernicious vomiting: the uterus is really diseased. When the woman's life is in present grave danger a surgical operation having for its object the removal of the neoplasm seems ethically permissible. This operation must not be directly

destructive of the foetus: it empties the diseased uterus and permits a foetus to die in another place which would have died in utero. An advantage is gained for the foetus: it may be baptized.

As a general rule the knowledge of surgery and of biology attained by the spiritual physician does not enable him to determine the diagnosis, prognosis, or treatment. He can only state the ethical principles and insist on them. Much must be left to the judgment of the accoucheur. For this reason the selection of a conscientious accoucheur is paramount.

The evident ethical law of the equal right of life of mother and child is made the basis of Rome's decisions, that as far as possible the welfare of mother and child must be served. No juridical inferiority may be adjudged to an unborn child. From the moment of conception it is a human individual with human rights. It is included in the great Canon, Thou shalt not kill. Directly to kill it is murder aggravated by the helplessness of the individual. Its direct killing may not be made the means to save any other life. Hence the direct killing of the foetus is never lawful. Its indirect killing must be restricted within very narrow bounds.

It must not be deprived of any right of which an adult human individual may not be deprived. One of the chief causes of the failure of medical ethics is the non-recognition of the equal rights of the unborn and the born of the human species.

When the cause of a pregnant woman's sickness is the pregnancy itself, the uterus may not be emptied before viability; even to save the woman from certain death. Agat natura. We may not do what nature may do. If the sickness of the woman results from a diseased organ or function, remedies, not directly attacking the foetus, may be applied, if there be extreme danger in delay. A person being strangled by a rope may cut the rope, even though the severing of the rope may indirectly cause the death of another.

But a person may not sever the rope to relieve himself from discomfort, or to ward off a feared danger.

At least early viability of the foetus must be awaited, even though it entails suffering and increases danger; but to save a pregnant woman in a grave present danger from a diseased pelvic organ, the organ may be resected as aforesaid.

It is perhaps needless to remind the reader that hydatid mole is a disease of the foetal envelope and therefore always associated with pregnancy.

The degeneration of chorionic villi causing hydatid mole may attack any part of the chorion, but is most usual in the chorion frondosum. De Lee declares that women have brought forth living children after the expulsion of hydatids. This is important in establishing the principle that the uterus in such case must not be emptied while bearing a living child save in the case in which the disease of the pelvic organ cannot await viability without gravest danger of the woman's death. If therapeutic abortion with indirect death of the foetus be performed in this case the child's right to life is not invaded. It will die in utero: its situs is changed to its

advantage, as it may be baptized. In no case may the foetus be directly destroyed.

It is true that in most cases of hydatid mole the foetus dies early and is absorbed, but De Lee declares, "In very rare instances is the child viable, which means that only part of the chorion is involved." It appears therefore that we cannot follow his declaration, "As soon as the diagnosis is made the uterus must be emptied."

The principle is surgically right but ethically wrong. It will, of course, be the procedure in most cases; but the admitted fact, even though rare, that a viable living child may co-exist with hydatids establishes the ethical principle that as far as possible, the rights of the unborn child must be safeguarded. De Lee cites the cases of Béclard the celebrated anatomist, and of Depaul who were born after the expulsion of hydatids. It is conjectured that these were twin pregnancies in which only one ovum degenerated into a mole. Had De Lee's principle been put into effect Béclard and Depaul would not have been born.

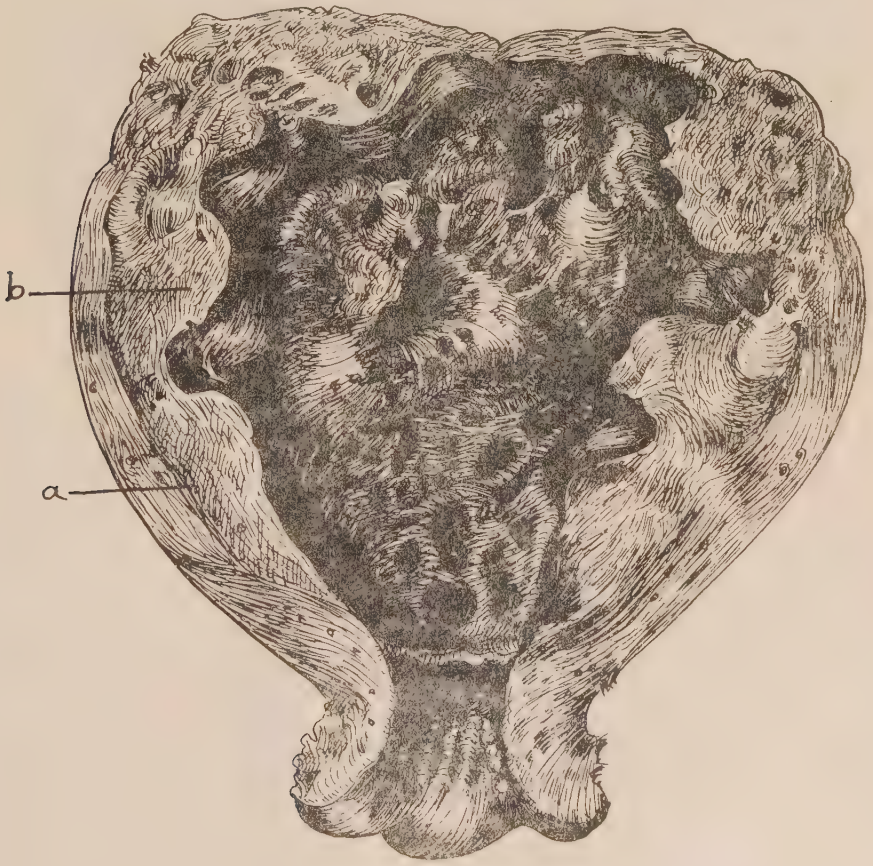

Fig. 97—Chorio-epithelioma. (Kelly and Cullen)

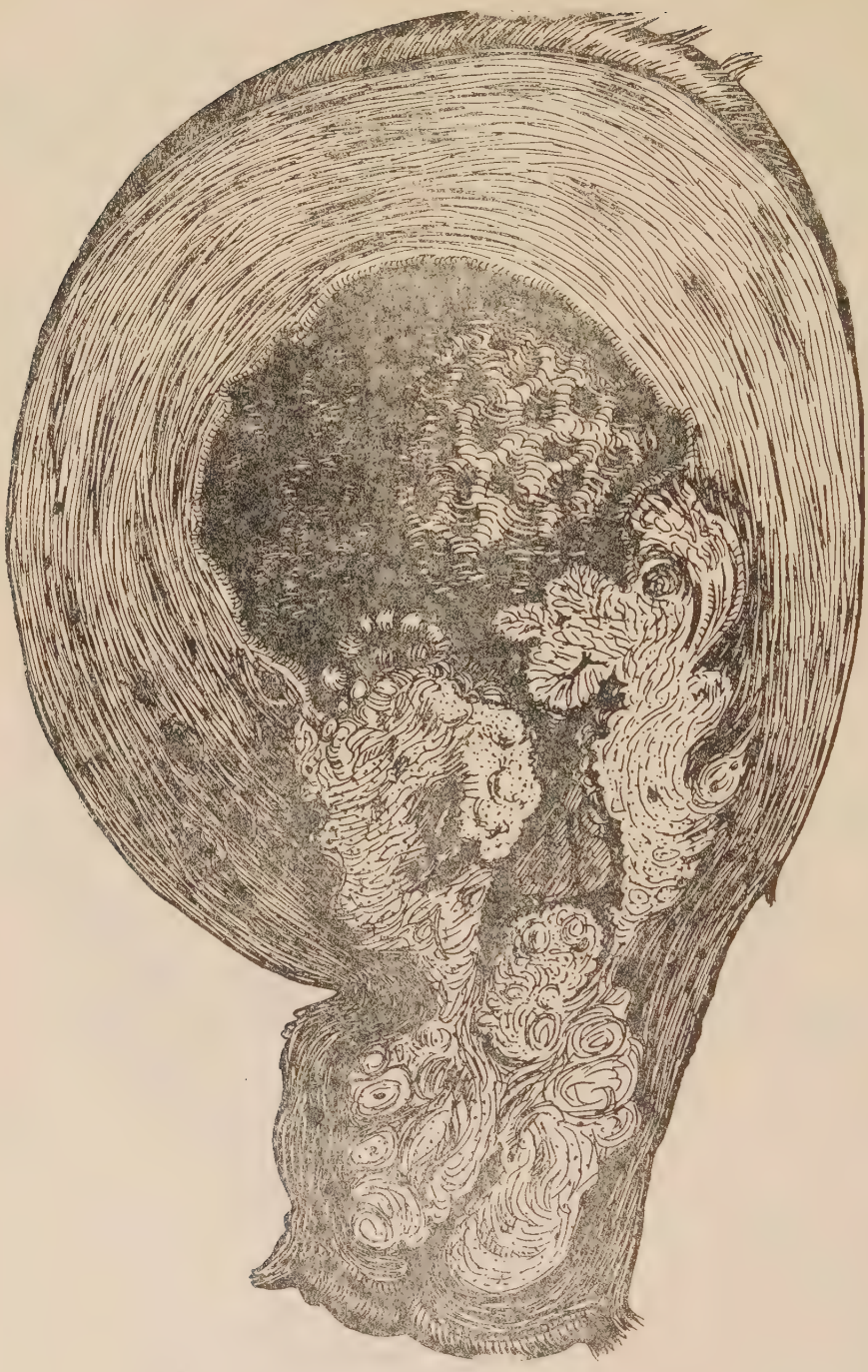

Fig. 98—Carcinoma of the Cervix and lower part of the body of the uterus, clinically suggesting a myomatous Organ.

"Chorio-epithelioma is a tumor developed from the foetal ectoderm, which may begin during pregnancy (normal or abnormal) or after the uterus is emptied, and which is characterized by exuberant growth, early and extensive local and general metastases, and rapid cachexia, often combined with sepsis." (De Lee) It is not always malignant: there are cases on record of spontaneous and permanent cures. The non-malignant type is rare. The malignant type is a rapidly destructive growth much feared by surgeons. The mortality is high. The proper treatment is radical extirpation of the uterus. However, hysterectomy should not be rashly performed. It is practically impossible to differentiate chorio-epithelioma malignum from a benign tumor. The surgeon is aware that curettage may turn a benign form of tumor into a bad case of malignancy. Metastasis also often develops very rapidly and when advanced renders the case inoperable.

The desire to save the pelvic organs should always prevail in doubt; but where the diagnosis of chorio-epithelioma malignum is fairly certain, no ethical law hinders hysterectomy, and the removal of the adnexa and the accessible metastases.

The aforesaid principle is a fortiori applicable to cancer. "Cancer of the cervix is one of the most murderous of malignant diseases." (Graves) Its malignancy increases treacherously and rapidly. About 50 per cent of the cases are inoperable when they come to the surgeon.

Cancer of the cervix is far more common than cancers of the body of the uterus. The estimate is about 8 to 1. The clinical and pathologic differences of the two malignant growths are irrelevant to our theme.

"Cancer of the body has its principal incidence later in life than cancer of the cervix, the figures of Koblanck showing that in 50 per cent. of cases it occurs between the ages of fifty and sixty." (Graves)

Radium treatment of uterine cancer is still in the experimental stage: didactic statements are unwise. In the present state of surgery more than fifty per cent. of uterine cancers are inoperable. Recurrence is frequent; metastasis of cancer of the uterus to the other organs is liable. Radiation is a good palliative treatment especially in inoperable cases. It is an expensive method: few hospitals have sufficient radium for the radium emanations. Extirpation of the uterus and all organs to which the cancerous infection has metastasized is at present the operation of choice.

"When the diagnosis of cancer is established the treatment is immediate radical operation." (Graves) Cancer of the body of the uterus frequently metastasizes to the ovaries: in most cases they should also be removed.

BIRTH CONTROL

In an address at the Marquette Road Baptist Church at Chicago in 1920, the Rev. Dr. J. M. Rudy of the Christian Church made the following blunt but true statement:

"After awhile some of the Protestant churches will have to make up Sunday schools out of bull pups and poodle dogs, for they haven't got the children, and worse than that, they don't want them. But they have the dogs.

"The Protestant church is following the pocketbook and failing in the large cities. The Catholic church is following the cradle.

"Foreignize the old American stock on the family question," said Dr. Rudy, "before you cry out against the foreigner in this country.

"We have permitted them to supply the population. Not to have children in the olden days was thought to be 'woman's blight,' but now your egotistical, self-loving, office seeking, female politician takes it not as a 'blight' but as a 'blessing' not to have babies."

The terms, birth control, and limitation of offspring are often employed in a synonymous sense, but in fact they are not synonyms. Birth-control means the prevention of birth: whereas limitation of offspring may be applied to the cutting off of the born child. The Laws of Lycurgus contemplated the physical strengthening of the Spartans by the destruction of weak babes: for economic reasons the Chinese destroyed female babes.

It is the disgrace of Christianity that the destruction of the unborn child in our times ranges from 10 to 30 per cent. of conceptions. The revolting crime of contraception is of such nature that it eludes detection and census. This unnatural practice is now defended by many persons of rank and influence.

Birth-control by virtuous restraint of sexual intercourse is not here in question. It is an obvious truth corroborated by St. Paul (I. Cor. VII, 5) that the married may practice conjugal continence as they will. Certain illustrious saints lived in perpetual conjugal continency. Birth-control in the present discussion is the voluntary conscious restriction of birth by contraceptive means.

The term birth-rate means the number of births per 1000 persons. The term *corrected* birth-rate is the number of births per 1000 women between 15 and 45 years of age.

Thomas Robert Malthus (1766-1834) was born in Surrey, England; of a wealthy father who was a disciple of Rousseau and Condorcet. The younger Malthus after a course at Cambridge took orders in the Anglican church and was assigned to a small parish in Surrey. In 1798 he published

an "Essay on the Principle of Population". The principle which the author aimed to inculcate is that "The realization of a happy society will always be hindered by the miseries consequent on the tendency of population to increase faster than the means of subsistence."

In another place he writes:

"I am not an enemy of population; I am an enemy to vice and misery; and the reason why I desire that no more children should be born than the condition of the country can support is this, that of those that are born the greatest possible number may live."

The remedy offered by Malthus was to defer marriage until one's economic status was capable of supporting a family; and in marriage to practice restraint, so that the size of the family would not tread on the limits of subsistence. His teachings give no sanction to contraceptive birth-control. In Malthus' view overpopulation was prevented by the high death-rate consequent upon the poverty and vice which he asserted to be the results of improvident marriages and lack of prudent sexual control. Malthus expressly condemned all voluntary contraceptive means.

The so-called Neo-Malthusians therefore do a great injustice to Malthus in taking his name. Their principles are not his. In one false principle only do they agree, viz., in assigning a high birth-rate as the cause of vice and misery. There is no art to find all the causes of vice. Radically it springs from a mysterious misuse of the free will of man. It is fostered by wealth more than by poverty. Loeb and Leopold, Thaw and Oscar Wilde were not the sons of poverty. Vice is rampant among the rich. The United States is the richest and the wickedest country in the world. In birth-control also it is foremost.

The misery of humanity sometimes springs from a defect of nature. These defects are not increased by a high birth-rate. The average physical development of the child of the large family is far better than that of the offspring of "the wealthy dame who is seldom brought to bed."

In 1924 Dr. J. W. Lockhart of St. John, Wash., in dissent from B. P. Chass (Childbirth in the United States, Current History, Aug. 1924) declares as follows:

"I do not in any sense agree with Mr. Chass in his contention that the death rate from childbirth is largely due to poverty, and that an increase in wealth would tend to lessen the mortality from puerperal causes. My own experience in nearly thirty years of medical practice among all classes of people, and that of many other physicians, negative his conclusion. It is almost proverbial with the medical profession that those women who work hardest in house and field, and live on coarse but wholesome food have but little to fear from disease or other complications in childbirth. It is the pampered rich, who live delicately every day and take but little exercise during pregnancy, that have the most to fear.

"Causes other than poverty have contributed materially to the increase in deaths from puerperal causes. The last decade has been preeminently an era of birth control, or attempted birth control, with the most pernicious physical results in many cases and there can be no doubt that

such practices have contributed largely to the death rate from causes connected with childbirth." (Current History, Dec. 1924)

"For as far as I know, none but over-enthusiastic advocates or outspoken opponents of so-called birth-control still hold to the view that regulation of fertilization can largely relieve us of poverty and crime, and that a high birth-rate alone is responsible for what we call over-population. Up to the present, individual and social incompetence probably has been the chief cause of poverty, and a reduction of the populations of China and India to one-half probably would not relieve these countries from recurring famine. Moreover, the question of over-population has been a regional or local, rather than a pan-terrestrial problem." (Dr. Arthur M. Meyers, Professor of Anatomy, Stanford University, Calif.)

"The propaganda has been based on an emotional reaction and not on a scientific analysis. The very life of the state is involved as soon as we begin to tamper with who shall and who shall not be born." (Dr. Louis I. Dublin, statistician of the Metropolitan Life Insurance Company)

The causes of poverty are mainly loss of physical or mental power, indolence, lack of thrift, and social injustice. The man who dreams of an Utopia in which all these ills shall be eliminated is either fool or knave. It is commendable, however, to strive to abate these ills by moral and legal restraint.

The Neo-Malthusians rejected late marriages and conjugal restraint as "being impracticable and productive of the greatest possible evils to health and morality." They would substitute popular diffusion of the knowledge of contraceptives.

The diffusion of this knowledge is quite general in England. The Malthusian League is under the presidency of Dr. Alice Drysdale Vickery The Malthusian League distributes leaflets without official interference. Holland is called the Mecca of the Malthusians. The two provinces, North Brabant, 649,000 inhabitants, and Limburg, 358,000 inhabitants, are almost entirely Catholic and these are a barrier to Neo-Malthusian principles. Reaction has set in in France against birth control. The law now forbids the birth control propaganda.

In England the Public Health Centers are enjoined not to give birth control information. The Hon. James Wheatley, Minister of Health, refuses to yield to the Malthusian League to rescind this order. Unemployment in England and scarcity of houses favor the Birth Control Propaganda.

Passing over the vile felons Francis Place and Richard Carlisle, the next prominent disciple of Malthus is John Stuart Mill (1806-1873), famous because of his "Principles of Political Economy." Mill was an utilitarian and contemplated a state of temporal happiness as the end of life. If we accept Mill's philosophy we shall be forced to defend limitation of offspring. The following passages illustrate Mill's philosophy:

"Every one has a right to live. We will suppose this granted. But no one has a right to bring creatures into life to be supported by other people. Whoever means to stand upon the first of these rights must renounce all pretensions to the last. If a man cannot support even himself

unless others help him, those others are entitled to say that they do not also undertake the support of any offspring which it is physically possible for him to summon into the world. Yet there are abundance of writers and public speakers, including many of the most ostentatious pretensions to high feeling, whose views of life are so truly brutish that they see hardship in preventing paupers from breeding hereditary paupers in the workhouse itself. Posterity will one day ask with astonishment, what sort of people it could be among whom such preachers could find proselytes."

"When persons are once married, the idea, in this country, never seems to enter any one's mind that having or not having a family, or the number of which it shall consist, is amenable to their own control. One would imagine that children were rained down upon married people direct from heaven, without their having art or part in the matter; that it was really, as the common phrase has it, God's will, and not their own, which decided the number of their offspring."

"Only when, in addition to just institutions, the increase of mankind shall be under the deliberate guidance of a judicious foresight, can the conquests made from the powers of Nature by the intellect and energy of scientific discoverers become the common property of the species, and the means of improving and elevating the universal lot."

"It is seldom by the choice of the wife that families are too numerous; on her devolves (along with all the physical suffering and at least a full share of the privations) the whole of the domestic drudgery resulting from the excess. To be relieved from it would be hailed as a blessing by multitudes of women, who now never venture to urge such a claim, but who would urge it if supported by the moral feelings of the community. Among the barbarisms which law and morals have not yet ceased to sanction is, that any human being should be permitted to consider himself as having a *right* to the person of another."

It is not clear that Mill advocated aught but conjugal continence, but his reasoning gave a great impetus to Birth Control.

There is much sophism in Mill's reasoning. No one holds that the married shall exercise no judicious foresight in their family relations: the opponents of Birth Control hold that man shall not gratify his sexual passions in a way contrary to the great ordinance of nature, and that he shall not by his wilful act defeat nature's life processes.

The Malthusian movement gained momentum and drew to its following rebels against religion and the existing order of things: Robert Owen, Robert Dale Owen, his son; Charles Knowlton, Charles Bradlaugh, George Drysdale. The most prominent Neo-Malthusians in England at present are Havelock Ellis, H. G. Wells, Alice Vickery Drysdale, Marie C. Stopes, Prof. J. Arthur Thomson, and Lord Dawson.

There are also found in England eminent defenders of the Christian law touching birth. Among the foremost Catholic defenders is Dr. Halliday G. Sutherland, author "Birth Control."

In February, 1923, Marie C. Stopes, who is a doctor of philosophy, not of medicine, brought a libel action against the aforesaid Dr. Sutherland and Messrs. Harding and More. The trial had place before the Lord Chief

Justice of England and a Special Jury. The jury held that Dr. Sutherland's statements were true in substance and in fact, but not a fair comment on the plaintiff. The judge gave judgment in favor of Dr. Sutherland.

Stopes appealed to the Court of Appeal, which reversed the judgment of the Lord Chief Justice, and gave judgment in favor of Stopes, with £100 damages and costs. Dr. Sutherland and Messrs. Harding and More appealed to the House of Lords. The expense of such an appeal, even if successful, is not less than £7,000. As the defendants are not able to furnish such sum Cardinal Bourne and the Hierarchy of England appealed to the people for funds. Though the defendants were fighting in the name of Christian ethics, the non-Catholics paid little heed to the appeal. Cardinal Bourne sadly declared that "the response met with was dishonouring to those religious organizations: Catholics were left to fight the battle alone."

Commenting on the case "The Tablet" justly remarks:

"It is too often imagined that Catholics are defenders of faith only. They are also defenders of morals. There are disquieting signs of a Protestant break-away in the sphere of Christian morals as well as in the sphere of Christian doctrine. Start a campaign to hinder some hard-working washerwoman from getting a glass of stout or for preventing a working man from taking his wife and family to a decent place of refreshment, where he can drink a glass of light beer while the others enjoy their milk or tea or lemonade, and you can arouse immense enthusiasm among our Free Church friends; but as soon as you come to a sin of which (unlike the fast-decreasing vice of drunkenness) many members of the Free Church congregations are themselves guilty, the pastors are nearly all silent. Can it be that our self-styled 'fearless' preachers are afraid of those on whose monetary support they depend and are only bold against the sinners who hardly ever come near their chapels? This is a plain question to put, and nobody will rejoice more than ourselves if we can be assured that our fears are unfounded."

On Friday, Nov. 21, 1924, the third and final judgment was rendered by the House of Lords acting through the Lord Chancellor, Viscount Finlay, Lord Shaw of Dunfermline, Lord Wrenbury, and Lord Carson.

The House of Lords is delegate from the King and therefore the final authority in English law.

The action was brought by the respondent against the appellants for damages for an alleged libel contained in the said book. The passage complained of, as set out in the statement of claim, was as follows:

"Exposing the poor to experiment.

"Secondly, the ordinary decent instincts of the poor are against these practices (meaning the plaintiff's system of birth control), and, indeed, they have used them less than any other class. But owing to their poverty, lack of learning, and helplessness, the poor are the natural victims of those (meaning the plaintiff) who seek to make experiments on their fellows. In the midst of a London slum a woman (meaning the plaintiff), who is a Doctor of German Philosophy (Munich), has opened a birth

control clinic (meaning the said clinic), where working women are instructed in a method of contraception described by Prof. McIlroy as 'the most harmful method of which I have had experience.' (Proceedings of the Medico-Legal Society, July 7, 1921.) . . . It is truly amazing that this monstrous campaign of birth control should be tolerated by the Home Secretary. Charles Bradlaugh was condemned to gaol for a less serious crime."

The Lord Chancellor (after stating the facts) said that he thought it was desirable to say that, in his opinion, the House was not concerned with any question as to the desirability of the use of contraceptives, or as to the propriety of encouraging such use by the circulation of printed matter, or in any other way. No such question had been, or could be, raised or argued in this action, which was founded only upon an alleged libel upon the plaintiff as to the mode in which she had carried on her campaign; and, accordingly, he did not think it would be proper for him to express an opinion upon the wider question. The real questions to be determined on this appeal were, first, what was the meaning and effect of the jury; and, secondly whether there should be a new trial.

The Lord Chancellor carefully reviewed the evidence and was of opinion that Dr. Sutherland had not violated truth or Stopes' rights.

His Lordship was further of opinion that there was no good ground for ordering a new trial on the ground of misdirection. He therefore moved their Lordships that the appeal be allowed and the cross-appeal dismissed, and that the order of the Court of Appeal should be discharged and the judgment of the Lord Chief Justice restored, with costs above and below.

Viscount Finlay, who concurred, said that it appeared to him that it was impossible to hold that the bounds of fair comment were exceeded by the expression of an opinion honestly held that such practices were revolting to the healthy instinct of human nature. There was an old and widespread aversion from such methods on this ground. This sentiment was voiced by the historian of the Roman Empire when in his fortieth chapter he referred to such practices as "detestable precautions." Their lordships were referred in the course of the argument to certain passages in the books published by the plaintiff of such a nature that they were not read aloud. These books had a very large circulation, and for his part he could not doubt that they were calculated to have a most deplorable effect upon the young of both sexes. It would be absurd to say that the epithet "monstrous" as applied to such a "campaign" passed the bounds of fair criticism, or that it was not fair comment to use language implying that such passage aggravated the criminality of the obscene libel.

A great deal has been said about the sincerity with which the plaintiff held the doctrines which she taught and carried into practice. One of the plaintiff's books was entitled "A New Gospel to the Peoples." In the prefatory note the author claimed that this gospel was the result of inspiration, and that she was merely the vehicle for conveying a message from a higher power. This message contained a foul charge against "certain ministers of the Church" with regard to the instruction given by them to the youth committed to their charge. Her sincerity was not the question. If an obscene libel were published, the fact that it formed part of a campaign

prosecuted with all sincerity afforded no defence. The right of free speech was claimed for the advocates of the new gospel, but they must submit to have their tenets and their practices criticised. A French savant was reported to have said that if he had been consulted at the time of the creation of the world he could have given some hints of great value; and this appeared to some extent to be the attitude of the plaintiff.

His Lordship thought it was unfortunate that the plaintiff used in connection with her clinic the title "doctor." She was a Doctor of Philosophy, but the use of the term "doctor" must lead a great many people who frequented the clinic to believe that the person in charge of it was a Doctor of Medicine.

Lord Shaw of Dunfermline and Lord Carson gave judgment to the same effect.

Lord Wrenbury alone dissented.

This whole action is of great value to the defenders of Christian ethics. Though the Lord Chancellor disclaimed intent to enter upon the broader field, the nature of the deliberations was such that it made plain that these noble Lords repudiate the revolting doctrine and practice of Birth Control. It will hearten the wavering to know that some of the finest minds of the world are opposed to the aforesaid crime. It is a high imprimatur of Dr. Sutherland's Book, and an everlasting monument to his courageous defense of true ethics.

The Neo-Malthusians stress the economic aspect. In 1800 the population of Europe was about 187 millions; in 1900 it was 400 millions. In 1801 the population of England and Wales was 8,893,000. In the next fifty years the population increased nine millions. The increase of population is not entirely a geometrical progression, because the parent factors drop out, and there are many non-operative factors, but statisticians estimate that if the birth rate be constant, a population which increases nine millions in fifty years, will increase eighteen millions in the next fifty years, thirty-six millions in the next fifty years, and so on. Thus they estimate that if the rate of increase of population that prevailed in England and Wales from 1800 to 1850 were to continue for four hundred years the population of England and Wales would grow to more than two billions. This is considerably more than the entire present population of the globe.

A check to the rapidly increasing population of the aforesaid countries was effected by a fall in the birth-rate from its maximum, 36.3 per thousand in the Victorian period, to about 24 per thousand. The Registrar-General for England declares that nearly 70 per cent. of the decline must be ascribed to voluntary restriction.

The English geographer, Prof. J. W. Gregory, in a recent address before the British Association for the Advancement of Science at Toronto, Canada, declared that, if the rate of increase of the human race which prevailed from 1900 to 1910 be maintained until the year 3,000, our planet shall have reached the maximum population supportable by earth's resources.

Now if all the economic arguments of the Neo-Malthusians were true they would not justify contraceptives. To tamper with nature's human

life's processes is essentially wrong: nothing can justify it.

The leading Neo-Malthusians are all Free-thinkers. They scoff at divine revelation. In their opinion the moral law is conventional. Thus their foremost advocate in Our Country, Margaret Sanger, presents this view:

"In the first place, let us recognize that in the ordinary acceptance of the term, morality is nothing but the sum total, the net residuum, of social habits, the codification of customs. Decent, conservative and altogether respectable cannibals find nothing immoral in anthropophagy. The only 'immoral' person, in any country, is he who fails to observe the current folk-ways. Thus nothing can be so absolutely 'moral,' as Samuel Butler suggested, as complete mental stagnation. To think about something new is as painful to the true conservative as to exercise an atrophied muscle. To doubt the wisdom of tradition is frowned upon. To introduce a new idea is to awaken a violent protest. More than once new inventions and discoveries of great value have been punished as crimes against the public good.

"Contrary to a widespread illusion, no sort of conduct among primitive and barbaric tribes is more rigidly regulated than the sexual. Custom controls the sexual impulse as it controls no other, and infraction of the traditional rules is punished by the severest penalties. In contrast with this tyranny of the primitive *mores*, civilization has brought about the gradual extension of the sphere of individual liberty and of personal choice. It has substituted heterogeneity in behavior and thought for rigid and routine servility to custom." (Birth Control Review, Sept. 1924)

It is true that human conduct is much fashioned by convention. But it is also true that there is an unchanging objective norm of morality resulting from the nature of things and their relations. This law is an attribute of Infinite Being, and is essentially immanent in all created being. The first principles of this law are necessary, self-evident. Human conscience has a natural aptitude for the moral law. Reason, education, and God's influence upon the human mind enable it to grasp the fulness of the moral law. The Decalogue is not the codification of customs, but the clearer exposition and codification of the moral law cognizable in nature by the human reason.

Therefore Paul declares that "the Gentiles who have no law do by nature the things (the essential precepts) of the law." (Romans, II, 14) The pagan may abuse his reason and wilfully sin. Pagan nations may become decadent in morals. Different ages, and different peoples may adopt different conventions; but the objective evidence of the true God and of the fundamental precepts of the moral law are in nature, and those who fail to perceive them fail by their wilful act.

The sense of shame is a sequel of sin, but it is innate in fallen humanity. It is developed and conventionalized by custom. The convention does not create the sense of shame, but the inborn sense of shame revolts at what convention decrees to be a fixed standard. Convention does not establish the standard. The sense of shame which impelled our first parents to cover their genitalia has remained among all peoples as a psycho-physical phenomenon. Somerville (Journal of the Anthropological

Institute, 1897) declared that the New Georgians of the Solomon Islands wear a loin cloth and "have the same ideas of what is decent with regard to certain acts and exposures that we ourselves have." He found it difficult to observe whether they practice circumcision.

Haddon, writing in the same Journal in the year 1890, of the tribes of Torres Straits declares them to be a very decent people, even given to prudery.

Vahness (Zeitschrift für Ethnologie, year 1900) declares that the women of New Guinea though "very slightly clothed, are by no means lacking in a well-developed sense of decorum. If they notice, for instance, that any one is paying attention to their nakedness, they become ashamed and turn round."

Stirling found a keen sense of modesty among the women of Central Australia.

I. R. Forster (Observations Made During a Voyage Round the World, year 1728) declares that "the principle of chastity we found in many families exceedingly well understood. I have seen many fine women, who with a modesty mixed with politeness, refuse the greatest and most tempting offers. . . . Neither austerity and anger, nor joy and ecstacy is the consequence (of an immodest jest), but sometimes a modest, dignified, serene, smile spreads itself over their face, and seems gently to rebuke the uncouth jester."

Captain Cook (J. Hawkesworth, Account of the Voyages, year 1765) found some degeneracy among the inhabitants of the South Pacific Ocean, but the general conduct was chaste and reserved. According to the same writer the men of New Zealand showed the "utmost reluctance and shame" when induced to show the penis. "The women's lower garment was always bound fast round them, except when they went into the water to catch lobsters, and then they took great care not to be seen by the men. We surprised several of them at this employment, and the chaste Diana, with her nymphs, could not have discovered more confusion and distress at the sight of Actaeon, than these women expressed at our approach. Some of them hid themselves among the rocks, and the rest crouched down in the sea till they had made themselves a girdle and apron of such weeds as they could find, and when they came out, even with this veil, we could see that their modesty suffered pain by our presence." (Ibid.)

The natives of Samoa, both men and women, possessed such a "delicate sense of propriety" that "even while bathing they have a girdle of leaves or some other covering around the waist." (Turner, Samoa a Hundred Years Ago.)

"The feeling of modesty is well developed among the Fuegians, who are accustomed to live naked. They manifest it in their bearing, and in the ease with which they show themselves in a state of nudity, compared with the awkwardness, blushing, and shame which both men and women exhibit if one gazes at certain parts of their bodies. Among themselves this is never done even between husband and wife. There is no Fuegian word for modesty, perhaps because the feeling is universal among them." (Hyades and Deniker, Mission Scientifique du Cap Horn, Vol VII.)

Even vice does not extinguish the natural sense of modesty.

Dr. Halder (Am. Journal of Obstetrics, year 1892) reports that though prostitution widely prevails among the Crow Indians of Montana, "a sense of modesty forbids the attendance upon the female in labor of any male, white man or Indian, physician or layman."

"In every North American tribe, from the most northern to the most southern, the skirt of the woman is longer than that of the man. In Esquimau land the parka of deerskin and sealskin reaches to the knees. Throughout Central America the buckskin dress of the women reaches quite to the ankles. The West-Coast women, from Oregon to the Gulf of California, wore a petticoat of shredded bark, of plaited grass, or of strings, upon which were strung hundreds of seeds. Even in the most tropical areas the rule was universal, as anyone can see from the codices or in pictures of the natives." (Otis T. Mason, Woman's Share in Primitive Culture.)

Modigliani (Un Viaggio a Nias) declares that the natives of Nias in the Indian Ocean are "modest by nature."

The Andamanese of the Bay of Bengal stand low in civilization, and yet they retain the natural sense of modesty. "Women are so modest that they will not renew their leaf-aprons in the presence of one another, but retire to a secluded spot for this purpose." (E. H. Man, Journal of Anthropological Institute, year 1838)

E. T. Dalton (Ethnology of Bengal, year 1872, and in Journal of Asiatic Society) declares that the women of Bengal are modest, and that the Naga women of Assam are not excelled by Europeans in decency and modesty.

Scientists assert the sense of modesty in the natives of Ceylon, of Borneo, of the Massai and other tribes of East Africa.

Lombroso and Carrara examined some negroes from the White Nile. They declare:

"As to their psychology, what struck us first was the exaggeration of their modesty; not in a single case would the men allow us to examine their genital organs; or the women, their breasts: we examined the tattoo marks on the chest of one of the women and she remained sad and irritable for two days afterward." (Archivio di Psichiatria, year 1896.) According to the aforesaid authorities these people are very moral.

"The negro is very rarely knowingly indecent or addicted to lubricity. In this land of nudity, which I have known for seven years, I do not remember once having seen an indecent gesture on the part of either man or woman, and only very rarely (and that not among unspoiled savages) in the case of that most shameless member of the community—the little boy. . . . It may be safely asserted that the negro race in Central Africa is much more truly modest, is much more free from real vice, than are most European nations." (H. H. Johnston, British Central Africa, year 1897.)

"It is surprising how a Monbuttu woman of birth can, without the aid of dress, impress others with her dignity and modesty." (British Medical Journal, year 1890.)

"There exists throughout the Congo population a marked appreciation of the sentiment of decency and shame as applied to private actions." (Journal of the Anthropological Institute, year 1985.)

Dr. Freeman (Travels and Life in Ashanti and Jaman) declares that in the Gold Coast and surrounding countries, nudity is common but "immodesty and indelicacy of manner are practically unknown."

During his travels among the Bedawin of the Transjordanica and among the Fellahin of Egypt the author found the sentiment of chastity to be general. The Arab servant would seek entire seclusion in order to urinate.

It is not our purpose to place the unspoiled savage in a state of primitive innocence; but we believe that the law governing the use of man's sexual powers is a natural law cognizable by the human reason, and thus universally existing in the human race. Savage and civilized sin against that law, but they are unable to eradicate the law from the consciences of all men. The conventions by which that law is put into effect differ. The naked savage in some regions is not ashamed of nudity because it is not a proof of unchastity: our conventions are the opposite. Clothing and modes of clothing are conventions; but the sentiment of shame is not a convention, nor an acquired sentiment, but nature's proclamation that the sexual functions are subject to a strict law.

Proper education develops the natural sense of shame: vice weakens it, but rarely eradicates it. Pagan Greece and Pagan Rome were licentious; but they fell into that state by wilfully disregarding the laws of nature. St. Paul's arraignment of them (Romans, I.) clearly shows this. The same may be said of the uncivilized nations who are found to violate chastity. The sentiment of chastity, found in all nations, ancient and modern, cannot have its last and true reason in aught save a natural law. It manifests itself in the child at the age of reason.

"Ipsa Venus pubem, quoties velamina ponit,
"Protegitur laeva semireducta manu."

The Medicean Venus is a symbol of feminine instinctive modesty. It is rooted in the instincts of all peoples,—a genuine irresistible instinct. Even the prostitute does not entirely divest herself of this radical and invincible sentiment.

"What we call shame is the product of a deep and healthy life-instinct for the preservation of the unconscious and uncalculating element in the sexual sphere." (Foerster)

The Neo-Malthusian argument of the danger of overpopulation may be met by the following arguments.

The individuals who practice contraception are never motivated by this general motive. They contemplate only their own little world and their own narrow selfish interests. Of course if the high consideration were cogent to lift the ban, then, no matter how selfish the individual motive, the perpetrator would not place an action objectively sinful. It is therefore necessary to treat the question as a national issue and as a principle of private conduct.

Overpopulation has never been verified in history. By overpopulation is understood a condition in which the soil is unable to produce the necessities for the population. The population is then said to press on the soil. This pressure is relieved by improved methods of husbandry, by new food products, by irrigation of arid land, and most of all by emigration. It falls within the plan of the Creator that the people of the populous centers shall spread out and inhabit undeveloped lands. When the primitive people purposed to dwell together in Shinar, God wrought a miracle to "scatter them abroad from thence upon the face of all the earth." The populous-potentiality of the earth is indeterminate, but it is far greater than its present population. By proper development and conservation of resources our own country could support more than ten times its present population. It is false to assert that the necessary supplies increase only in arithmetical progression.

The late Surgeon General Gorgas, who made Panama as sanitary as the United States, declared that the results of Panama "will be generally received as a demonstration that the white man can live and thrive in the Tropics. When the great valleys of the Amazon and of the Kongo are occupied by a white population more food will be produced in these regions than is now produced in all the rest of the civilized world."

The superficial area of the earth is 196,040,000 square miles: of this 57,255,000 square miles are dry land. The total population is estimated at 1,748,000,000, a density of population of 30.5 per sq. mi.

By contrast with some densely populated countries it is evident that the human maintenance-potential of the earth dispels all reasonable fears of overpopulation. This is still more evident from the fact that this potential may be indefinitely increased.

The density of population of Japan is 305.3 per square mile; of Belgium, 648; of Rhode Island, 566.4; of Barbados (British West Indies), 1157.2; of Bremen, 3143; of Hamburg, 6564; of Macao, 18714.

If an adjustment could be effected by migrations a benign equilibrium might be maintained. Migrations have been the law of human history. This law is hindered in its operation now by the restriction of immigration by many countries. The congested centres must not insist on entering the highly developed countries, but must spill their overflow into the empty spaces of the world and develop them.

Even if we be confronted with overpopulation of such degree that the ordinary mode of death would be starvation, it would not justify Neo-Malthusian birth control. No man justifies murder to relieve any condition that threatens human life. Birth control is a crime against life, a crime intrinsically wrong.

An economic state may arise in a land which may limit marriages. The struggle for individual existence may become so keen that a man will not assume the burdens of marriage until his economic status warrants the contract. Such a policy is ethical and commendable, provided selfish ease and luxury be not contemplated. It is nowise to our nation's good that the economic independence of woman postpones and limits marriage. This very independence is a great factor in criminal birth control.

While we raise our voice against Onan's horrid crime, we realize that the world will not receive our plea. Birth control is a powerful manifestation of the spirit of the world. It is a world contagion. In Current History (April, 1925) Baroness Ishimoto of Japan thus declares for Japan:

"As for the great human problem of what to do with a surplus of children for whom there is no adequate means of support at home and no practical future abroad, the women of Japan will find the solution and make it effective. They are fast awakening to the issues of the hour. As we, the women, see it, the panacea for our present economic and political ills is birth control. Only through the scientific limitations of our population can we hope to maintain trade, peace and good-will between Japan and the rest of the earth. The Western world has recently discovered the scientific method of birth control and nearly all Western countries have seriously taken up the matter of spreading information on this subject. In Japan there are no actual laws against the dissemination of this information and last year I was one of those who helped to arrange for the visit of Margaret Sanger to our country. Nearly everything written that bears on the important problem of population has been translated into Japanese. Birth control has met a great deal of opposition even in the most enlightened of Western countries. It is still fighting for recognition in the United States. In Japan, a country vastly older than the United States and weighed down with inflexible tradition, any attempt to bring about a radical social reform, unsupported by custom, is met with violent antagonism, yet today many Japanese women have accepted the necessity for a change in the teachings of centuries and are openly advocating as a patriotic duty, an intelligent regulation of the future numbers of the population."

According to The World Almanac the world population was 1,623,300,000 in the year 1913; it was 1,748,000,000 in 1924. This is an increase of about 7 2-3 per cent.

Figures compiled by the Trade Record of the National City Bank of New York state that in the same period world food production increased 13 per cent. The means of transportation also increased: railroads from 700,000 miles to 750,000 miles; shipping from approximately 40,000,000 tons in 1913 to over 60,000,000 tons in 1924.

Man's necessities are mainly food, clothing, shelter and fuel. Up to the point of maximum production these necessities are developed from nature in proportion to the number of human population. New sources of supply are continually discovered and developed. No man can fix the maximum production of a country,—much less the maximum production of the whole earth. The present population of the earth is estimated 1,748,000,000. It is a tentative estimate subject to wide variation. The British Association Meeting in 1890 placed the maximum population adequately supportable by the earth at 6,000,000,000. Such estimates are of no worth. There is not sufficient data to ground them. New inventions continually change the economic status of man. In truth conservative examination of present data would multiply the aforesaid estimate indefinitely.

Moreover the universe is under the control of Divine Providence, which has bestowed upon it the blessing of fecundity. Hence the control of world population is reserved to God alone. Many causes outside of Birth Control regulate the increase of humanity. We know not the duration of time, nor the destinies of nations. These lie hid in the counsels of God. If man's life consisted in making his earthly journey as long and as comfortable as possible, and if the material universe were everlasting, the whole conception of human life would be changed. But man is merely a pilgrim here; time is a "hyphen between two eternities." God concedes to the world a span until the number of the elect shall be filled. That unbelievers scoff at this argument proves its truth.

An act therefore that is condemned by the moral sense within us; that is condemned by the unwritten law; that is condemned by hygiene; that is condemned by divine Revelation; that is condemned by the infallible teaching of the Catholic Church can not be justified on any plea.

Special circumstances often arise wherein not Birth Control but Self Control must be practiced. Extreme poverty, sickness, malformations, etc., demand deferring of marriage, or conjugal continency, or, it may be, coitus restricted to the immune periods. While there are no absolute immune periods coitus in certain seasons, as before explained, would sufficiently limit offspring.

Lady Barrett, C. B. E., M. D., M. S., B. Sc., Consulting Obstetric and Gynaecological Surgeon to the Royal Free Hospital of London, England, in her recent work, Conception Control, recommends continence restricting coitus to one week in the month. She quotes scientific data published by Seigel in the Münchener Medizinische Wochenschrift, 1916. Owing to the short leave granted to soldiers to visit their homes, the aforesaid scientist collected data of the conception of between two hundred and three hundred children born in the war period.

"He finds that the likelihood of fertilization increases from the first day of menstruation, reaching the highest point six days later, the fertile period remains almost at the same height till the 12th or 13th day, and then declines gradually until the 22nd day, after which there is absolute sterility."

Now it is obvious that there is not an abrupt leap to or from the high fertilization period in the menstrual cycle. In the normal menstrual cycle of 28 days we may take the 23rd as the center of the highest immunity and reckon backward and forward three days, making seven days (Lady Barrett's week) of practically safe immunity. But little danger would be incurred from the 18th to the 26th day inclusively.

"Just as the soil is suitable only at certain seasons for the reception of the seed, so also in the human race intercourse does not always take place at a time suited for the reception of the semen. To be effective, coitus must occur at the proper time. . . . The act of intercourse that is to lead to conception may best occur either just before or just after the menstrual flow, when, moreover there is strong desire for the sexual embrace, and neither when the body is fasting, nor when it is full of drink and undigested food. The time before menstruation is, however, unsuitable, for

then the womb is heavy from the flow of blood, and two conflicting tendencies will come into operation, one for the absorption of material and the other for its outflow. During menstruation, again, conception is unlikely to occur, for then the semen is wetted and washed away by the flowing blood. The sole proper time is that immediately after the flow, when the womb has freed itself from its humors, and warmth and moisture stand in harmonious relationship." (Soranus)

The view that the first days of the inter-menstrual interval are those most favorable to the occurrence of conception, is further confirmed by the statistical data collected by Löwenfeld, Ahlfeld, Hecker, and Veit; and it appears that as the date of the next menstruation is approached, there is a continual decline in the frequency of conception; just before the flow, conception hardly ever occurs. Hensen, from the records of 248 conceptions in which the date of the fruitful intercourse was exactly known, draws the following conclusions:

"1. The greatest number of conceptions follow coitus effected during the first days after the cessation of the menstrual flow.

"2. When coitus is effected during menstruation, the probability of conception increases day by day as the end of the flow approaches.

"3. The number of conceptions following coitus effected shortly before menstruation is minimal.

"4. However, there is no single day either of the menstrual flow or of the inter-menstrual interval, on which the possibility of the occurrence can be excluded."

Feokstitow has drawn up from statistical data an ideal "conception-curve," which teaches that conception most readily ensues upon coitus effected soon after the end of the menstrual flow, in the first week, that is to say, of the inter-menstrual interval; moreover, the curve shows that the highest percentage of conceptions occurs on the first day after the cessation of the flow, and that after this day the percentage of conceptions declines. The percentage frequency of conceptions from coitus effected on the last day of menstruation, and on the first, ninth, eleventh, and twenty-third days, respectively, of the inter-menstrual interval, is expressed by the ratio of 48:62:13:9:1; and, between the points given, the course of the curve is almost rectilinear. The probability of the occurrence of conception on the twenty-third day of the interval (on which day the curve reaches its lowest point), is one-sixty-second of the maximum probability.

Such temperate tenor of conjugal life would increase its physical and spiritual happiness. From four to seven of the interdicted days are menstrual days and by the law of decency would compel continence, so that there is an interval of scarcely two weeks of the month in which *conjuges* who must limit their offspring are obliged to abstain from coitus. The happiness of the conjugal embrace free from anxiety, and from the degrading methods of Birth Control is full compensation for the abstinence. Both principals are capable of a higher enjoyment because of the healthy temperance in their use of nature.

To limit offspring by restricting coitus to the ten immune days of the intermenstrual periods by common consent of the *conjuges* can not be cen-

sured. They are free to use or not to use their marriage rights: they are not free to abuse their sexual functions and pervert the laws of nature. Thus to limit reproduction merely for an economic reason, or to avoid the ordinary burdens of parenthood, is intensely selfish, and against the finest sentiments of humanity.

"Continence may be a hard condition . . . but it can be borne, and it is our duty to urge this lesson upon young and old who seek our advice on matters sexual." (Sir William Osler.)

Touching this subject the Anglican Church agrees with the Roman Catholic. In 1914 a Committee of Anglican bishops declared:

"It seems to most of us only a legitimate application of self-restraint that in certain cases (which only the parties' own judgment and conscience can settle) intercourse should be restricted by consent to certain times at which it is less likely to lead to conception. This is only to use natural conditions; it is approved by good medical authority; it means self-denial and not self-indulgence. And we believe it to be quite legitimate, or at least not to be condemned."

In resolution 68 of the Lambeth Conference the Bishops declared:

"We utter an emphatic warning against the use of unnatural means for the avoidance of conception, together with the grave dangers—physical, moral, and religious—thereby incurred, and against the evils with which the extension of such use threatens the race. In opposition to the teaching which, under the name of science and religion, encourages married people in the deliberate cultivation of sexual union as an end in itself, we steadfastly uphold what must always be regarded as the governing consideration of Christian marriage. One is the primary purpose for which marriage exists—namely, the continuation of the race through the gift and heritage of children: the other is the paramount importance in married life of deliberate and thoughtful self-control." The Bishops enunciate a Catholic doctrine. The essence of marriage is the indissoluble union between man and woman. The primary end of marriage is the procreation and upbringing of children.

The secondary ends are companionship and mutual assistance in life and the restraint of concupiscence.

Birth Control converts marriage into whoredom.

"Voluptates meretricias vir in uxore quaerit quando nihil aliud in ea attendit quam quod in meretrice attenderet." (St. Thomas, Suppl. Qu. 49, Art. 6.)

The controlled coitus is a sort of reciprocal masturbation. Onanists lose respect for each other: it is a frequent source of divorce. The degraded woman becomes Kipling's woman "as pale and stale as a bone."

"It is possible to assert without fear of contradiction, that no ordinary decent man or woman approaches or begins the practice of artificial birth control without experiencing at first unpleasant feelings of uneasiness, hesitation, repugnance, shame and remorse. Later on these feelings may be overcome by habit, for the voice of conscience will cease when it has been frequently ignored. This does not alter the fact that at first the natural moral instincts of both men and women do revolt against these practices.

To the conscience of mankind birth control is a shameful action." (Dr. Sutherland)

"1. A civilization cannot be maintained with an average of less than four children per marriage; a smaller number will lead to actual extinction.

"2. Much information exists tending to show that heredity strongly favors the third, fourth, fifth, and subsequent children born to a given couple, rather than the *first two*, who are peculiarly apt to inherit some of the commonest physical and mental defects (upon this important point the records of the University of London Eugenics Laboratory should be consulted). A population with a low birth rate thus naturally tends to degenerate. *It is the normal, and not the small family, that gives the best children.*

"3. The present differential birth-rate—high amongst the less intelligent classes and low amongst the most capable families—so far from leading upwards, is causing the race to breed to a lower type.

"4. The small family encourages the growth of luxury and the development of what Mr. Leroy-Beaulieu calls *l'esprit arriviste.*

"5. The popular idea that *childbirth is injurious* to a woman's health is probably *quite erroneous.* Where the *birth-rate is high the health of the woman is apparently better than where it is artificially low.*

"6. A study of history does not show that nations with low birth-rates have been able to attain to a higher level of civilization. Such nations have been thrust into the background by their hardier neighbors." (Prof. Meyrick Booth, quoted by Dr. Sutherland, l. c.)

M. Leroy-Beaulieu by *l'esprit arriviste* means a selfish, materialistic concentration on outward success, and outward social advancement. This spirit is the inevitable result of artificial birth control.

The evils of artificial birth control are also physical. The *Lancet*, May 14, 1921, reports that the leading gynecologists of the Obstetric Section of the Royal Society of Medicine condemned the use of contraceptives.

"1. Contraceptives cause sterility: young couples who practice contraception in the early years of their marriage are often denied children when they would have them." (Dr. R. A. Gibbons, Physician to the Grosvenor Hospital, England)

"2. Neuroses are largely the result of contraceptives." (Prof. McIlroy of the London School of Medicine for Women)

Dr. Sutherland quotes the late Dr. F. F. Taylor, President of the British Gynaecological Society:

"Artificial prevention is an evil and a disgrace. The immorality of it, the degradation of succeeding generations by it, their domination or subjection by strangers who are stronger because they have not given way to it, the curses that must assuredly follow the parents of decadence who started it,—all of this needs to be brought home to the minds of those who have thoughtlessly or ignorantly accepted it, for it is to this undoubtedly that we have to attribute not only the diminishing birth-rate, but the diminishing value of our population.

"It would be strange indeed if so unnatural a practice, one so destructive to the best life of the nation, should bring no danger or disease in its

wake, and I am convinced after many years of observation, that both sudden danger and chronic disease may be produced by the methods of prevention very generally employed. . . . The natural deduction is that the artificial production of modern times, the relatively sterile marriage, is an evil thing, even to the individuals primarily concerned, injurious not only to the race, but to those who accept it." In fact in 1905 the Southwestern Branch of the British Medical Association passed the following resolution:

"That this Branch is of opinion that the growing use of contraceptives and ecbolics is fraught with great danger both to the individual and to the race.

"That this Branch is of opinion that the advertisements and sale of such appliances and substances, as well as the publication and dissemination of literature relating thereto, should be made a penal offense."

The atheism of Birth Control may be judged from the following facts. The standard authority of the Neo-Malthusians is Dr. Geo. Drysdale's *The Elements of Social Science.* The author died in 1904. His niece is the president of the Malthusian League. On page 413 we read:

"But this is a certain truth, that any human being, any one of us, no matter how fallen and degraded, is an infinitely more glorious and adorable being than any God that ever was or will be conceived."

Again on page 162: "Chastity, or complete sexual abstinence, so far from being a virtue, is invariably a great natural sin."

On page 366:

"Marriage distracts our attention from the real sexual duties, and this is one of its worst effects."

The author evidently pleads for free love, wherein the only bond is sexual passion. He says so openly:

"Marriage is based upon the idea that constant and unvarying love is the only one which is pure and honorable, and which should be recognized as morally good. But there could not be a greater error than this. Love is, like all other human passions and appetites, subject to change, deriving a great part of its force and continuance from variety in its objects; and to attempt to fix it to an invariable channel is to try to alter the laws of its nature." (Page 353)

Drysdale recognized no bond uniting man and woman save fleshly lust. What he writes is true of lust; it is not true of the love that befits man. The Neo-Malthusians follow Drysdale: the true Christians follow St. Paul:

"For this is the will of God, your sanctification, that ye abstain from fornication; that each of you know how to possess himself of his own vessel (that is, to control his body) in sanctification and honor, not in the passion of lust, even as the Gentiles who know not God." (I Thess. IV, 3-5)

"As the fulfillment of the sexual instinct is gained by man by the act of copulation, in woman by childbirth, the use of preventives tells far more against the woman.

"Both are affected in character by the use of preventives, through lack of the discipline which comes of upbringing children, the development of

qualities of unselfishness and sacrifice, the sharing in children's games and renewal of youth thereby, etc.

"The woman who uses preventives tends to lose her beauty early, becomes thin and neurotic." (Prof. Leonard Hill, M. D., F. R. S.)

In the normal woman the maternal passion is stronger than the sexual passion.

At times the child-hunger of the woman is so great that it drives her to kidnaping and other strange unethical acts.

In January, 1928, in Greenwich Village, N. Y., a widow gave birth to an "eugenic baby."

She is 37. Her husband, member of a prominent Kentucky family, died three years ago, leaving her $500,000. Her marriage was childless and she wanted a child more than anything else in the world, but she did not want a husband.

She deliberately arranged to satisfy her desire. The baby was born Jan. 10, in the Lying-in hospital.

It was a daughter and she named it "Vera," meaning truth.

The father, whose name has not been revealed, and whose identity is being guarded, is said by close relatives of Mrs. Burnham to be a young man of good family and good character, with what is known as "the proper eugenic background." He has entirely obliterated himself from the picture, under a business-like arrangement.

To her aunt, Miss Sally Mailhouse, with whom she lives, Mrs. Burnham has confided all details of her project.

"Mrs. Burnham has done nothing she is ashamed of," says Miss Mailhouse. "She told the people she wanted to know—the members of her family. She is not trying to conceal it."

The Neo-Malthusians, however, make woman the drudge of male animal lust.

Drysdale, their chief teacher, declares:

"Any preventive means, to be satisfactory, must be used by the woman, as it spoils the passion and the impulsiveness of the venereal act, if the man have to think of them."

Dr. Mary Sharlieb is a recognized authority in England. Forty years' experience of gynecology is reflected in the following splendid statement:

"Limitation of families is wrong and dangerous because it does not control nor discipline sexual passion, but by removing the fear of consequences it does away with the chief controlling and steadying influence of sexual life.

"Secondly, the limitation of the family is not really in the interest of over-burdened mothers. It may relieve them of too frequently recurring child-bearing, and from the burden of too large a household; but on the other hand, by removing the chief check on the husband's desires and demands, it destroys the wife's protection from his too great insistence and persistence.

"Thirdly, the possibility of satiating desire without incurring the risk of procreation tends to the over-development of the sexual side of the characters of both man and woman. It is as if the loathsome practices of

Heliogabalus made perpetual eating and drinking possible. As Foerster says 'The situations which will necessarily arise from the man's sexuality being exclusively directed towards sensuous gratification, and being unaccustomed to control, will far surpass, in tragedy, sordidness, and poisonous consequences, anything which could possibly arise from the most unlimited child-bearing. The increase of man's subjection to passion and artificial sensuousness will be disastrous.'

"The picture of a society under a régime of uncontrolled license, of unbridled passion, and absolute self-indulgence, is far from attractive. It would be in all respects worse than anything imagined by the Epicureans. The countries which practiced such self-abuse would rapidly degenerate, and would show a lack of physical vigor and of moral greatness. If the intentional restriction of offspring was practised chiefly by the educated classes, the balance of power and of government would necessarily incline to those who were less well educated but more prolific, and who, unfortunately, would not have behind them the steadying traditions of unselfishness, of self-control, and of capacity for command. The condition of such a State would be one of sheer materialism, the conduct of life depending entirely on bodily desires, not on true bodily welfare, while the capacity for mental and moral greatness would steadily diminish. Those who approve and inculcate the voluntary limitation of families, and who would divorce the sexual act from the intention of procreation, tell us that life is imperfect without the exercise of all the functions of the body; that health both of body and mind must suffer unless sexual desires receive ample gratification; and that the denial of gratification to sexual impulse is injurious to the physical and moral well-being of both men and women. They would have us believe that men who live continent lives become impotent, and that their nervous systems suffer from their self-restraint. That these statements are not generally correct is proved by the experience of thousands of men and women, who for various reasons live celibate lives in absolute chastity, and who maintain physical vigor and nervous integrity. This is not only true of clergy and the religious orders, but also of many men and women who for various reasons connected with work or with family circumstances have neither married nor have sought physical indulgence. Doctors are practically unanimous in the opinion that young men and young women, even during the years when passion is strongest and self-control most difficult, can safely practise continence; that it does not diminish their subsequent fertility, nor does it injure their health. If these young people can be continent without suffering injury, still more can those who are older and whose passions are less eager. In the case of the married couple, their mutual love and the tender intimacy of abstinence may be more difficult on account of their lives, but even in such cases abstinence can be practised without injury, although it may be that it entails more regret and more difficulty. There can be few cases in which abstinence is necessary for married couples apart from those who, owing to unhealthiness of mind or body, ought not to have entered into the contract of marriage.

"During hundreds of years chivalry and fine feeling have tended to spiritualize man's relation to woman. The finer and the more manly the

man, the greater has been the delicacy and consideration which marked his conduct to his wife, and to all women; and one of the saddest implications of the present proposal to promote a purely animal relation between man and woman is the fact that it tends to lower the man to the level of the brutes. Of course this is not the object of those who advocate the voluntary limitation of the family, but it is the practical outcome of such a procedure.

"A consideration of the relations between the sexes in the lower order of creation shows that at any rate in the higher order of mammals, intercourse between the male and female occurs only at certain intervals, and that it is normally followed by pregnancy. It is rare for the female to be willing to receive the advance of the male except at regular intervals, special to each variety of animal. Probably the much more frequent desire of human beings is partly due to the fact that they are brought up to expect and to claim unlimited sexual intercourse as a right, partly due to the unfortunate dual standard of legal morality, and partly to the inferior legal and social position of woman, which has led to the opinion that whereas any lapse from morality on her part must bring with it social ostracism and censure it has very generally been considered neither wrong nor discreditable for men to consort with women who were not their wives, even after marriage."

The moral sense of the world abhors the gluttony of the pagan Romans, who ate food and then vomited it forth in order to experience the sensual delight of eating again. Birth control defrauds nature in order to have sensual delight without the obligations of parenthood. The declaration of the Lambeth Conference of Anglican Bishops is most pertinent. Birth control "errs against purity by isolating the physical side of sexual union, and making it an object in itself apart from its proper purposes." In the onanistic coitus there is neither in actual contemplation nor in memory any spiritual element, nothing of the "soothing and consoling love."

Birth control relieves the husband of responsibility and thus tends to make his sexual demands excessive. The woman becomes the man's jaded harlot; the man's exhausted powers find the conjugal embrace stale and flat.

"We must also remember that by removing the natural result of sexual intercourse, those who advocate the use of contraceptives are removing one of the most potent safeguards which protect the welfare of married women, and that while they are making her more than ever subject to her husband's desires, they are to a great extent robbing her of her power to be mistress of herself. Further they do not seem to realize the probable result on unmarried people of diffusing the knowledge of the use of contraceptives. Those unmarried people who are not protected by a high ideal of morality are at the present time frequently deterred from wrong-doing by their knowledge of the probable consequences. It has always been held that women are the superiors of men in the matter of sexual morality: we have no truth of this belief. In regard to other shortcomings, such as untruthfulness, dishonesty and selfishness, the two sexes appear to be fairly on an equality, and there is some reason to think that the woman's higher

standard of sexual morality is very largely the product of her age-long fear of the consequences of immorality. It is all too probable that if the fear of bearing illegitimate children were removed women as a whole might gradually sink to the level of men in the matter of sexual purity. Up to the present time the dual standard has prevailed, and sexual dereliction on the part of the man has always been considered to be so natural and so common as to need little excuse or apology. On the other hand, the woman who has an illegitimate child has been considered to be so degraded that even the attempt to rescue her has been a forbidden subject in polite society. Parents have not hesitated to give their daughters in marriage to men who were notorious evil livers, but men have very rightly objected to marrying a girl who was known to have made so fatal a mistake. It is quite easy to understand how this state of things came about. The maid, or wife, who had an illegitimate child introduced bastardy and visible shame into her family, and although in these latter days we are lovingly and justly endeavoring to save the unmarried mother from the worst of consequences of her sin, and while we are endeavoring to secure nurture and education for the much sinned against offspring of irregular unions, we should surely also endeavor to level up the moral standard of the men, and to teach society that there can be but one standard for both sexes, and that both man and woman should bring to their espousals healthy bodies and pure minds." (Dr. Mary Sharlieb, op. cit.)

An ideal: marriage at 20; a child every two years—nine months' lactation, six months' rest, nine months' pregnancy.

"No harm, but great good, is done by the careful regulation of human appetites, and the doctors of today agree in the fact that self-control and continence injure no one.

"Evidence on this point is clear and unconflicting. The medical witnesses called before the Birth-Rate Commissions were unanimous in their statements that continence before marriage, and chastity and moderation after marriage, are not only consistent with perfect health but are hygienic and desirable.

"It is also necessary to consider whether the use of contraceptives has any injurious effect on those who use them, and whether from this point of view there is not some reply to those who advocate their use.

"A long professional life devoted to the service of women leads me to the conclusion that contraceptive practices are injurious in their effects on many who use them. These injuries occur almost entirely through their influence on the nervous system. Women approaching, or passing through, the menopause often suffer from a noticeable amount of nervous worries. They are irritable, depressed and difficult: in many cases they sleep badly and suffer from headache. Women at this critical period frequently complain of vague nervous sensations—such as numbness, pins and needles, 'neuritis' (so called), and other unnatural sensations which lead them to fear the onset of paralysis.

"All these symptoms are not essential to the menopause—they are exaggerations or distortions of what is natural to the change of life. The young girl should go through her period of evolution comfortably and

healthily. So the middle-aged woman should go through her involution without undue creaking and jarring.

"The young girl who has been over-indulged, and whose nervous system is in a condition of irritable weakness, will suffer unduly during the rapid evolution of puberty. Just so the elderly woman whose nerves have been injured by excess in alcohol, in sexuality, or in other ways, will fare hardly at the menopause.

"The injury inflicted by any unnatural habit is deep and lasting—more formidable than any local lesion. From the nature of the case, no absolute demonstration can be made, but the cumulative evidence derived from forty years' experience cannot be set aside." (Dr. Mary Sharlieb)

Though the data warrant not a universal statement, it may be asserted that in most cases the wife controls the conjugal embrace.

"Like other absurd ideas that cluster about the copulative act, there is quite an extensive belief prevalent among women that if passion is suppressed the liability to conception is thereby greatly diminished or removed, and hence they are persistent in their efforts to subdue their feelings.

"This opinion is, of course, entirely erroneous and without any foundation, but nevertheless women permit themselves to be governed by such a fallacy and jeopardize their best interests.

"The very common practice of 'withdrawal,' to which the husband is often persuaded, reacts with the greater injury upon the woman.

"If the woman permitted herself to act in accordance with her natural emotion at this time, the male could not readily withdraw at this critical period if he would, as her efforts at retention would serve as an impediment.

"Aside from the mental effect of outraged manhood, which is always detrimental, the effect of this practice upon the man is inconsiderable when compared to the condition in which the woman is left.

"The physical effect upon the man, if we accept the additional strain of his struggle with the impulse, is much the same as that of normal contact, as the depleting effect of the emission will relieve the tension and have a sedative action, and, though the beneficial effects of natural coitus will not be obtained, yet the injury to the man will not be as great as that to the woman.

"In addition to the disgust with which rebellious nature punishes a violation, the woman in this event is left unappeased and excited, with her genitalia congested, and with no spasmodic depletion to relieve the tension.

"She will regain composure only after such a time as the circulation has become equalized, which is indefinite.

"For her there has been no compensation whatever, her nervous system has been disturbed, her mind perverted, her sex abused and her temper severely ruffled.

"She cannot be sure that the procedure has been prohibitive and she awaits her recurrent menstruation with misgivings.

"Similar efforts only exaggerate her condition and eventually her mechanism is disturbed to an extent that makes harmonious action difficult and natural response to stimuli uncertain.

"When oft-repeated she is more or less constantly in a state of unrest, or nervousness, and her genital organs may be in a mild state of chronic congestion.

"She will probably develop some leucorrhoea and be predisposed to menstrual disorders.

"Instead of developing equality the breach is widened and family relations become strained." (Malchow, The Sexual Life)

In the brute creation the female will receive the male only when in a condition to conceive. A total analogy does not exist in mankind, but the woman has periods when she has full right to refuse the husband's sexual demands. The decent husband will not force acquiescence at such periods; and the faithful wife will be generous of her body to the man she loves. There is much wisdom in Jeremy Taylor's declaration:

"In their permissions and license the husband and wife must be sure to observe the order of nature and the ends of God. He is an ill husband that uses his wife as a man treats an harlot, having no other end but pleasure."

The Bishops of the Anglican Church of England declare:

"We think it sufficient to say that women should do all in their power to make and keep marriage natural and chaste, and to reinforce by their ever-stronger and finer instinct, the resistance to the misuse of marriage; nor should they shrink from the heavy burdens which marriage may entail upon them."

The very nature of the conjugal union places it in the woman's power in most cases to continue the embrace until the natural orgasm has place. No woman should yield herself to a man who uses the sheath or condom (a rubber cap fitted upon the glans penis). Every man is moved by the woman's charms in the conjugal embrace: few men will resist the woman who pleads and cooperates for a natural orgasm.

Touching contraceptive methods the Rev. F. B. Meyer, B. A., D. D., a leading clergyman, declares:

"Nature herself condemns these practices; and the people who have practiced them are compelled to admit, with the findings of the Bishops' Committee, that such married life as has been subjected to these methods has always proved to be desolate and disappointing. To those who obey her, nature distributes her rarest gifts with prodigal generosity, but she chastises with a whip of scorpions all who ruthlessly offend against her conventions. The falling of the womb, nervous depression, loss of memory, even the asylum, are among her penalties. But the sacrifice of modesty, of self-respect, of mutual respect, to say nothing of the clear upward gaze of the pure soul, are still a heavier infliction to all right-minded people."

Dr. Foerster of Zurich throws his great authority against birth control:

"In every direction we see man subordinating nature to his own intellect and will, so why should he not make use of technical science in the sphere of sex relationships, where so many important interests are at stake?

"These arguments are sufficiently plausible to be in the highest degree dangerous. Yet it is easy to reply to them. In the first place, we readily admit that the sphere of sex should be subjected to the human spirit; nay, we might go further and even define sexual ethics as the complete subordination of our sexual conduct to our life as a whole, with all its fundamental interests and responsibilities. But nothing could be more radically false than to imagine that the methods of Neo-Malthusianism mark an advance in the subordination of nature to the spirit. It must be obvious to every thinking person that precisely opposite is the case. The perfection and popularization of these practices will not assist men to master their instinct and passions, but will on the contrary make it easier than has ever before been the case for man's sexual and animal self to dominate the will and spirit. For the artificial prevention of conception does not in the least control or discipline the sexual feeling itself. *It merely frees it from producing its normal results: and it is these very results, which have, in the past, so powerfully contributed towards self-discipline and self-control.* Remove the proper and natural consequences of sexual intercourse, and a controlling factor of the first importance has been eliminated. We may therefore assume with the utmost confidence that the subjection of men and women to their sensual passions will rapidly increase with the increase of Neo-Malthusian practices. It will increase, moreover, for this further reason that the prevention of conception causes the sex instinct to concentrate itself, in a most unwholesome and dangerous manner, upon mere barren pleasure: here we have naked sensuality, stripped of all the nobility, sanctity, and responsibility which attach to the normally directed sexual impulse, associated as it is with *creation*. Those who are today recommending the practices to which we refer, have not the remotest idea of the slippery downward slope upon which they have set their feet. Once let people begin with deliberate scientific purpose to pick out the element of pleasure from sexual activity as a whole, while neglecting its true meaning and purpose in our lives, then there remains no reason why the pleasure itself should not be enhanced by scientific means. It is no accident that this enhancement is most extensively practiced in the identical country in which the artificial restriction of the family has been most generally adopted.

"But it will be asked: Is not the liberation of women from the burden of excessive motherhood a great success on the part of Neo-Malthusianism? It is only an apparent success. In reality it is women, in particular, who will be the sufferers through anything which increases sexual irresponsibility in men. Even the most excessive production of children could not endanger women so greatly or so deeply undermine the true necessities of their existence, as will the artificial restriction of the family. The male sex passion, when relieved from all sense of responsibility and from the necessity for periods of self-control, when artificially liberated from the natural consequences which lend it meaning and dignity and link it to the purpose of life as a whole, will necessarily become more pleasure-seeking and more recklessly selfish than it could be under normal conditions. The result will be an increase in every sort of dis-

loyalty and irresponsibility. This will not fail to make itself felt at those times when the wife is least able to respond to the claims of a desire for pleasure, and in cases of illness when she doubly needs her husband's undivided affection. The situations which will necessarily arise from the man's sexuality being exclusively directed towards sensual gratification and being unaccustomed to control, will far surpass, in tragedy, sordidness, and poisonous consequences, anything which could possibly arise from the most unlimited child-bearing. Moreover immoderation in this last respect can be met only by an increasing spiritualization and control of merely sensual passion, and never by methods which degrade and brutalize the sex impulse itself. It is true that these artificial methods may *momentarily* relieve much suffering. In the long-run, however, according to their own inner nature, they must increase the sum total of human suffering in every sphere of life—for their effect is immeasurably to increase the subjection of man to passion and artificial sensuousness. This effect will be felt not only in the sexual sphere. It will spread to all other departments of life.

"We may therefore feel absolutely certain that along these lines there can come nothing but injury to the human race—even if it were assured (which is far from being the case) that these methods would result in the birth of none but the most desirable children. Moreover this result presupposes a superhuman degree of responsibility and selflessness, the very qualities, it will be observed, which will most suffer under the Epicurean philosophy which stands behind the artificial restriction of the family! While speaking of the question of racial health we may remark that it should never be forgotten that not only in the case of the individual but in that of the race, too, the strengthening of character, and the establishment of the spirit as ruler over the body, is the foundation of all health. For this reason, a married life in which all motives for the overcoming of self have been artificially eliminated must necessarily lead in the direction of racial degeneration."

Dr. Foerster corroborates the foregoing argument by the following powerful words:

"It is a main argument of the Neo-Malthusians that the prevention of conception is no more than a continuation of the great process of civilization—the subjection of nature to reason. This is a piece of pure sophistry. In the foregoing remarks we have already pointed out that the artificial restriction of the family is anything but a triumph of the spirit over natural forces. It is merely a mechanical prevention of certain natural consequences of these forces, and it must contribute towards subjecting man still further to the dominion of these forces, since it removes those important restrictions which nature herself has set in the way of natural sexual impulses. We do not go so far as to assert that married people should not come together unless they have the intention and possibility of producing a child; genuine love is an equally justifiable motive for the consummation of their passion. But the conscious, deliberate prevention of conception brings an entirely new factor into the whole sex-relationship. It introduces an element of technical routine into that which should be as far removed as possible from all routine; it represents a concentration upon

the mere mechanism of sexual love—a side of life which should be veiled over with a spiritual garment and not be dragged forward into the forefront of consciousness and made the object of a special technique. Practices of this kind cannot be carried on without a gradual coarsening and disintegration of feeling, in consequence of which (especially in the man) sensibilities will be dulled which can hardly be described in words, but which are of decisive importance for the whole spiritual and moral nature, particularly on the sexual side. In the sexual organization of the man there is always a danger that the mere impulse towards sexual gratification will break loose from all other physiological and spiritual aspects of sexual life. All deeper masculine education—not least man's education through womanly feeling—has tended to restrain the merely sensual element and to unite the brute instinct with a whole world of higher sensibilities which veil it over and place it more or less in the mental background. But what is the part played by the artificial prevention of conception. It drags this brute element, this thirst for mere sensual gratification, away from its spiritual and moral associations, its great redeeming and sanctifying influences, thereby producing a spiritual injury of incalculable seriousness—an injury the very essence of which is the liberation of the natural from the controlling spiritual."

E. Heinrich Kisch is opposed to coitus interruptus and to all forms of contraception:

"In several cases of vaginismus occurring in young married women which have come under my notice, it was observed that the attempts at intercourse gave rise to violent involuntary spasmodic contractions of the constrictor cunni and the other muscles of the urogenital and anal regions, and in addition it was found that these attempts were followed by tachycardial paroxysms with dyspnoeic manifestations, lasting for a considerable period, it might be as long as one or two hours.

"In women who had practised coitus reservatus for a prolonged period, in fact for several years, in such a manner that, notwithstanding the occurrence of intense voluptuous excitement, complete sexual gratification rarely, if ever, occurred—in such women, in whom these malpractices seemed to have profoundly influenced their psychical life, I have frequently witnessed a form of reflex cardiac disorder which I must regard as a variety of the multiform neurasthenia cordis vasomotoria. In such women, still at the climax of their physical powers and of their sexual needs, attacks of palpitation suddenly occur at irregular intervals, several times daily or less frequently. Associated with this increased frequency of the cardiac activity are an extremely distressing feeling of anxiety, a sensation of faintness, headache, vertigo, a weakness of the muscular system, and at times actual attacks of syncope. Physically, the women are extremely depressed, irritable, inclined to weep, unhappy, and weary of life. At the same time, digestion is impaired, the appetite is small, and there is constipation. The pulse is in most cases feeble, small, of low tension, easily compressible, increased in frequency, often intermittent, sometimes more distinctly arhythmical. The heart is found to be sound on physical examination, nor can any abnormality be detected in the great vessels. The

lower extremities are free from oedema; the urine does not contain albumin.

"Women thus affected are sometimes believed to be suffering from cardiac disorder, in other cases they are subjected to various modes of gynecological treatment; until at length the physician, by appropriate questions, becomes enlightened regarding the true cause of the cardiac disorder, namely coitus interruptus. If it is possible to prohibit effectually this unwholesome practice, the cardiac symptoms soon cease to recur."

Eulenburg, Beard, Mantegazza, Hirt, Von Hösslein, Freud, Valenta, Graefe, Goodell, Mensinga, Lier, Ascher, Kleinwächter, Elischer, Neugebauer, Fehling, and Pigeolot declare coitus interruptus to be harmful.

"Moderation and continence must aid as far as may be necessary in preventing an undue increase in population. Hegar does not fail to point out the evil effects of an excessive limitation of the family.

"In a marriage when only one child is born, the child is the object of unceasing anxiety and attention, and real or imaginary dangers assume an excessive importance in the morbidly excited imagination of the parents. Hence we find a continuous excess of watchfulness and over-education in the case of the only child, to whom independent thought and action are entirely unknown. Boys become milksops, girls nervous and hysterical. In the two-children-system, again, one or both of the children may die when the age of the parents is already considerably advanced. . . . Ribbing writes, 'although the sexual impulse is the product of a powerful natural developmental force, still the temporary, and sometimes even the permanent, control of this impulse is a moral civilizing force of enormous importance.' The writer is opposed to the use of artificial preventive measures; he considers them untrustworthy and dangerous to health. Untrustworthy for the reason that nature has endowed living organisms with a strong impulse toward conjugation and has equipped with very powerful forces the processes by which fertilization is effected. Every physician is familiar with cases in which preventive measures have proved ineffective. This fact is proved also by the statistics of prostitution. Although prostitutes are fully instructed in the use of preventive measures, which they almost universally employ, nevertheless every year a smaller or larger number of prostitutes become pregnant. These measures are dangerous to health, partly because of their interference with natural functions, because many of them are clumsy and ill adapted; and partly, again, because owing to their use the woman fails to enjoy the natural periods of repose which are entailed by pregnancy, parturition, and lactation. Noteworthy, also, are the psychical considerations adduced by Ribbing against the use of preventive measures. The majority of well-bred women feel deeply wounded if they believe themselves to be regarded merely as a means of enjoyment, not as individuals, as persons with inalienable rights. For the man also there is danger, for it is easy for him to acquire a dislike to the wife who, even though on his own initiative, occupies herself with the technique of the sexual life in a manner which he feels instinctively to be opposed to the chastity and pure-mindedness demanded by every man from his wife.

"Max Nordau also insists on the moral disadvantages of the wide diffusion of the use of preventive measures. 'If a race or nation has reached this point in its downward career, the individuals of which it is composed lose the capacity of loving in a healthy and natural manner. The sense of the family disappears; the men will not marry, because they find it inconvenient to burden themselves with the responsibility for another human life, and to care for any other creature than themselves; the women dread the pains and inconveniences of motherhood, and if they marry, they endeavor, by the employment of the most immoral means, to insure barrenness. The reproductive instinct, of which reproduction has ceased to be the aim, is in some annulled, whilst in others it degenerates into the most peculiar and irrational perversities. The act of sexual union, the most sublime function of the organism, is degraded into a profligate act of lust; it is no longer undertaken in the interest of the perpetuation of the species, but exclusively for the pleasure of the individual, and without any relation to the needs of the community."

Dr. Sutherland adds a subtle argument that should not be passed over in silence:

"Even if the question be considered solely as a matter of physiology the difference between these methods (onanism and seasonal coitus) is apparent. Physiologists and gynaecologists believe that in natural intercourse there is apart from fertilization, an absorption of certain substances into the system of the woman. The rôle of this absorption is at present obscure, but it obviously exists for a purpose; and it is permissible to speculate whether, under natural conditions of intercourse, there is not a mutual biological reaction that makes, amongst other things, for physical compatibility. Whatever be its purpose or explanation in the marvelous mechanism of nature, this absorption of vital substances is either hindered or is absolutely prevented by artificial methods of birth control."

In a lecture at Washington, D. C., Dr. Harvey W. Wiley, the renowned chemist and pure food expert, said:

"Birth control always results in immorality and frequently leads to degeneracy. There is but one arbiter on the question of birth control—and that is nature. The trouble is that many people want all of the pleasures of life without assuming any of the responsibilities. It should always be against the laws of this country to hand out recipes for controlling birth. Such recipes would endanger the health of individuals and would undermine the morality of the nation."

Preaching before the Church Congress at Leicester, England, the Rt. Rev. Charles Gove, Bishop of Oxford, declared that divorce and Birth Control have so weakened Christian morality and faith that Britain can not properly be called a Christian country.

In the United States Section 211 of the federal Penal Code forbids the dissemination of contraceptive teaching under the penalty of five years in prison or amercement of five thousand dollars or both.

According to Section 1142 of the New York Penal Code, to give information leading to contraception is a misdemeanor. It is greatly to be feared that the active propaganda conducted by the Birth Control advo-

cates may repeal these legal barriers to their shameless crusade. Birth Control appeals to a materialistic hedonistic age, which makes religion a synthesis of human opinions and usurps God's right to control the universe.

The following poem is a voice in the wilderness.

"CHILDLESS"

By Paul Harris Drake

Give answer, O ye women of today—
  Emancipated as your mothers never were—
With care-free hours filled with pleasure gay—
  White-fingered ease and cloaks of silk and fur.

By what faint logic in your thoughtless lives
  Do ye your new-found freedom justify?
Come, mothers, daughters—blithesome childless wives—
  Accept the challenge; state the reason why!

Is it ye fear God's wracking, primal pain—
  The travail whence the world was builded up?
Who gave thee right to break life's living chain—
  To spill the sacred wine and break the cup?

Has life for you no thoughts of aught but self?
  Dost never see th' accusing hand of fate
Write with remorseless pen the fiery scroll:
  "When comes old age; ah, then 'twill be too late"?

And I who destined am to be thy mate;
  To sit with thee across a barren board—
To never hear the laughter sweet of child
  Or share with offspring fair my slender hoard,

Shall I in sorrow, and with cheated soul,
  Go down life's winding pathway sick at heart,
Throughout the years of my allotted time
  In secret blaming thee who shirked thy part?

O childless wives, on YOU will rest the blame—
  The curse which, rampant, murdered ancient Rome—
If, knowingly, you fail the ages' test
  And fail to make, on Earth, a child, a home.

The odious Malthusian principles of volitional limitation of offspring are a sure cause of national degeneracy. The eminent specialists Drs. Variot and Pinard declare that through this cause France is dying. The latter even advocates the abolition of the taint of dishonor of the unmar-

ried mother. In his view bastard babies are better than no babies. No nation can live by one-or-two-child marriages.

While artificial limitation of offspring is a world plague, it is more prevalent in France than in other countries. Thus the population of the other great countries of the world increases, while that of France is stationary. This degeneracy is due solely to selfish economic reasons. This plague is spreading. At New York in March, 1923, Hon. Henry Morgenthau, former United States ambassador to Turkey, declared to the Child Adoption League that France was in her present difficulty solely because of her small families. Her population is stationary at 38,000,000; whereas Germany has a constantly increasing population of 70,000,000. He warned America to be mindful of her man power.

At this time Spain's birth rate is high, but Spain's infant mortality exceeds the birth rate. Out of one hundred mothers selected at random from all the provinces twenty-eight of them reported they had given birth to more than eight children, and many of them reported ten, twelve, fourteen and even a few as many as twenty. These statistics show a proportion of greater fecundity than in any other cultured country in Europe. Three hundred and eighty-two of these four hundred and seventy-three children died before they had reached maturity; the majority attained only the age of 7. This means a mortality record of 80 per cent., the highest ever published.

According to Dr. Newsholme, "a reduction of human fertility has taken place implying a reduction in the crude birth-rate of England and Wales of over 28 per cent. between 1778 and 1909."

In the last four decades the birth-rate fell in the British Isles (save Ireland), Australia, Austria, the German Empire, Italy, Belgium and France. In 1850, in magnitude of population France was the second in rank of the Great Powers; today she is the last but one. Figures from the Prussian statistical bureau show that the German birth-rate fifty years ago was 52.6 per thousand, as against only 21.3 today.

In 1900, Dr. A. Newsholme, M. D., M. R. C. S., made a partial report of the birth-rate in the United States. Taking Boston and Providence as representative of the nation he found the native-born birth-rate of Boston to be 18.2 per 1000 population; that of Providence, 16.0. The foreign-born birth-rate of Boston was 31.1; that of Providence, 31.1. The eminent scholar draws the following just conclusion:

"Evidently the fertility of the native-born populations of these cities is little, if any, greater than that of Paris; and they may be said, like Paris, to have arrived at a position of stagnation of population, if not of actual decrease, apart from immigration."

The census of the United States of 1920 revealed that there was a total population of 105,710,620. There were 24,351,676 families. The average size of the family was 4.3. Of 24 representative states, comprising more than two-thirds of the nation's population, the birth-rate per 1000 was 23.7. It was highest, 31.6, in North Carolina; lowest, 18.9 in Oregon. There were nearly 1,600,000 births in the 28 states reporting vital statistics to the Department of Commerce in 1926, as compared with 960,000 deaths,

of which 116,000 were children under one year of age. The birth-rate per 1000 population was 20.1, as compared with 21.1 for 1925, while the death-rate was 12.1 for 1926, as compared with 11.7 for 1925. Florida had the highest birth-rate, 26.4 per 1000 population. The lowest was in Montana, where it was 14.2. Florida also had the highest death-rate, 15.3, and Montana had the lowest, 7.8. The infant mortality rate was also high in 1926. Delaware had the highest infant death-rate, 92.9 per 1000 population, while Oregon was lowest with 51.6. Portland, Ore., had the best record among the cities with 38.7. Richmond, Va., with 107.4, had the highest rate for cities.

Our national birth-rate is steadily declining. In 1850, exclusively of slave families, the average size of the family was 5.56. In 1860, excluding slaves, it declined to 5.3.

In 1870 it was 5.1; 5.00 in 1880; 4.9 in 1890; 4.7 in 1900; 4.58 in 1910; 4.3 in our last census of 1920.

On the basis of this birth-rate our people are not reproducing themselves.

Comparing Dr. Newsholme's statistics, *a fortiori* our native born population is dying. Were it not for the infusion of foreign blood into our population by immigration we should now be in birth-rate inferior to France.

A warning that college-trained men and women are not living up to their duty to society to give children to the world, and that unless there comes some change for the better the result will be the virtual extinction of "educated families" was sounded by Dr. Charles W. Eliot, president emeritus of Harvard, in a talk before the Smith college alumnae of Boston.

"Women's colleges in the United States", said he, "have still to demonstrate that the fertility of the race is not affected by higher education.

"Statistics distinctly show", he continued, "that educated men and women, married, are not replacing themselves. This is a thing that needs to be studied in colleges for men and colleges for women, because if things go on as they have since colleges for women started and since colleges for men have been turning out so many bachelors or men who postpone their marriages, it means the ceasing of educated families."

Dr. Eliot said that he had recently been studying the Harvard quinquennial catalogue, and that he had noted the disappearance of families among the alumni.

In the year 1925, Dr. L. I. Dublin, Statistician of the Metropolitan Life Insurance Co., President of the American Statistical Association, adduced convincing data to prove that to replace the original quota from which the parents sprung every childbearing family must produce 3.1 children. This is the minimum which he posits for replacement, in order that the population may not decline. A reserve is calculated in the aforesaid number for normal infantile mortality. Therefore while modern Onanists are disseminating the tenets of Birth Control, our people are not reproducing themselves.

In this connection the words of the eminent Swedish professor, Herman Lundborg, are apposite:

"There is grave doubt whether a people really gains anything when millions of money pour into the country. Luxuries are demanded, lassitude sets in, and the interest in work and production falls off. Women avoid maternity, and these processes, beginning in the middle and upper classes, gradually work downward, and in time destroy the race."

The remedy is religion: humanity must be persuaded that to the right of sexual intercourse corresponds the reciprocal duty of rearing offspring; and that the natural and positive divine law forbids man at any time to oppose this reciprocity. Nature is so ordained to this course of cause and effect, that even when impregnation is impossible the natural order of the process must be observed. Every creature is subject to law. Man "noble in reason", "infinite in faculty", "in action like an angel", "in apprehension like a god", "the beauty of the world", "the paragon of animals" is created after the image and likeness of God. He is a rational animal,—a soul and a body. Soul and body are ineffably interrelated. The sexual power is not solely bodily; it is also spiritual. Complex, highly endowed human nature is endowed with sexual activity only in its mortal phase. The prime end of this activity is reproduction.

"It is evident that in its purpose the reproductive instinct is not selfish, because it is a creative function of the individual in the interest of the race. However, to make sure of race preservation, Nature has attached a pleasure value or motive, both physical and emotional, to the sexual function; and consequently a basis for selfish interest has entered. And like the ego-instinct, the reproductive instinct may remain at its lowest animal levels and serve to give only purely selfish and physical satisfaction, or it may develop individually into constructive tendencies relating to the family and still larger groups." (Dr. Maurice A. Bigelow)

The desire of the lawful physical and emotional delights of lawful marital intercourse is man's right only if he exclude not the primary end. If nature be defrauded of that right, then the act is brutally selfish, unnatural, and abominable to the Author of nature.

"The so-called contraceptive devices are intrinsically immoral because they involve the unnatural use, the perversion of a human faculty. One of the most important human faculties is used in such a way as to frustrate its natural end. Such conduct is quite as unnatural as self-mutilation, or the practice of solitary vice. Any person who rejects this fundamental moral principle concerning the wrongfulness of perverting a faculty, must logically hold that there is no such thing as intrinsic immorality, that moral badness is always identical with individual disutility, and that anything is right which any individual thinks is useful for him.

"The practice in question is degrading because it perverts conjugal intercourse from cooperation (potential if not actual) with the Creator into a mere means of sensual gratification. It brings husbands and wives down to the level of mutual instruments of indulgence. The disgusting calculation and repulsive artifice which characterize the various contraceptive devices, tend inevitably to diminish conjugal reverence, self-respect and mutual respect. It is doubtful whether any normal man or woman ever began such practices without suffering a severe moral shock, or con-

tinued them without serious moral degeneration. It is not surprising that men and women who thus pervert one of the highest functions of life, and the most intimate relation of marriage, should grow obtuse in their perceptions of the sacredness and exclusiveness of wedlock, and of the binding character of conjugal obligation. It is not a mere coincidence that childless marriages should form such a large proportion of the cases in which divorce is sought on 'statutory grounds.' Incidentally, I would observe that, so far as I know, physicians are practically unanimous in declaring that all the contraceptive practices are in some degree injurious to health." (John A. Ryan, D. D.)

Catholic ethics hold that the frustration of nature in artificial birth control is against the law of nature, therefore no argument however plausible may be adduced to set aside this natural law once admitted.

Blackstone describes the natural law thus:

"As man depends absolutely upon his Maker in all things, it is necessary that he should in all points conform to the Maker's will. . . . This will of his Maker is called the law of nature. . . . When He created man and endued him with free will to conduct himself in all parts of life, He laid down immutable laws of human nature. . . . He laid down only such laws as were founded in those relations of justice that existed in the nature of things antecedent to any positive precept. . . . These are the eternal immutable laws of good and evil . . . which He has enabled reason to discover, so far as they are necessary for the conduct of human actions. . . . This law of nature . . . is binding all over the globe, in all countries and at all times: no human laws are of any validity if contrary to this."

Reason discovers that the use of the sexual power in man is restricted. No civilization sanctions its indiscriminate use. This restriction arises out of the essential constituents of human nature. The positive law of God confirms what the nature of man demands: "Thou shalt not commit adultery." The sexual power in man is restricted to one lawful use, conjugal union unto the begetting of offspring. All deviations from this end are perversions of the sexual power. The perception of the exclusive sacredness of the sexual faculty in man is both intuitive and proven by reason and faith. In brute nature the copula is always directed to propagation. In man the powerful sexual propensity has the same primary end. As man is rational, the use of such power is subject to his reason. Reason is able to discover the right use of the sexual power and its abuse. Revelation adds to the sanction of the law of nature the sanction of the positive law of God. We may go further: the positive law of God more clearly reveals that the prohibited thing is against the law of nature.

Onanistic intercourse differs only mechanically from masturbation. The same curse is upon it, aggravated by the complicity. If the seed be ejaculated in its proper place and then expelled or devitalized, it is a kind of anticipated infanticide.

Onanism with a barren woman is also against nature, and is an abomination. The reason is that such use of man's sexual power is essentially contrary to the end set up by God in man's creation. The sexual power differs much from the power of other members of the body. It is indif-

ferent whether I walk or interrupt my walking; whether I extend my hand or withdraw it. But the orgasm of coitus draws from all the powers of my being, both psychic and physical, precisely because it is ordained by God to reproduce a man.

When therefore that high power is abused and diverted from its proper end man's nature is wrenched back from its essential order. Onanism therefore is essentially evil: God himself can not dispense a man from this law.

In 1909 W. C. D. and C. D. Whetham published in "The Family and the Nation", the results of an examination of the birth-rate of 100 families who have held their title to nobility for at least two preceding generations. The report is tabulated as follows:

Period	*No. of births to each fertile couple*
1831—40	7.1
1841—60	about 6.1
1871—80	4.4
1881—90	3.1

In the London Times of October 16th, 1906, Mr. Sidney Webb gave the result of a voluntary confidential census among a class of "intellectuals," from which it appeared that of 120 marriages, 107 were "limited" and 13 "unlimited," the average number of children of each of these marriages being considerably under two.

Mr. Webb also quoted (The Times, October 11th, 1906) the experience of the Hearts of Oak Friendly Society, which gives a "lying-in benefit" of 30s. for each confinement of a member's wife. From 1866 to 1880 the proportion of lying-in claims rose slowly from 217 to 247 per 1,000; and then continuously declined from 1881 to 1904, when it reached only 117 per 1,000 members. Even if large allowance be made for sources of statistical error, it is highly probable that in the family experience of this particular Friendly Society—which has over 272,000 adult male members —there has been a large decline in fertility.

The only effective influence in the world against this decline of humanity is the Roman Catholic Religion. Fervid appeals are made in England and in France against this vice in the name of nationalism. Men now recognize that naught will coerce the passions and selfish interests of humanity save religion.

"To return to active religious faith is the first element in the new moral regime to which we must return in order to combat systematic sterility." (P. Leroy-Beaulieu)

"To fight against depopulation, religion is the best means, because it can employ means of action which are not at the disposal of the state." (Probus)

"If the Catholic Religion have no other merit than the power to arrest the terrible plague of depopulation it should receive consideration. The remedy must lie in the moral order. I, a free-thinker, see no other moral remedy save the restoration of the great power of religious moral and social discipline." (Gustave Hervé)

"One must have faith controlling the body and supernatural hope in the soul in order to rear a large family." (General de Castelnau)

"We fear not to declare that the actual problem of reproduction is unsolvable. Why? Because they who pretend to attack the evil, excessively confiding in their poor plan, brutally and systematically reject the idea of inculcating in the people respect for the Divine Will." (Pierre Dauchez-Thiery)

"What is the remedy for the evil that threatens us? I see but one remedy: a return to right reason and to religious principles. It is only the religious localities that register a positive birth rate. Dr. H. Dauchez has patiently instituted a comparison between two groups of families; each group composed of 600 families. One group was of practical Catholics; the other group was of indifferent Catholics. He verifies the following statistics: the average number of children of the practical Catholic is 6.18; of the indifferent family, 2.84." (General Maitrat)

"Verily history and statistics prove that the religious idea and the full practice of religion rank among the greatest and surest means to inspire men to fulfill their duties in general and the conjugal duty in particular. Religious belief therefore in this field . . . . is the most powerful ally of the French patriots who wish not to see their country die." (Robert Morche)

"The definite and durable victory of France is bound up with the question of birth-rate. We ask of any impartial observer: what can solve the question if it be not the Catholic Religion?" (Cardinal Mercier)

General considerations of honor, of decency, of physiology, of nationalism may remove some of the prejudice, but in stern reality it is only a religious motive that is effective.

The plainest sorts of truths are told the French about the decreasing birth-rate. The National Alliance and government officials hold that a family should have three or more children. To encourage such families government allowances of 60 to 200 francs a year are granted for each child after the second—under 13 years.

The alliance asks also for legislation to provide for the construction of cheap, attractive homes available only to large families, establishment of "supersalaries" in industries to heads of such families, preference in government employment, the plural vote, giving the father as many votes as there are persons in the family, and real war on "birth control" known there as Neo-Malthusianism.

One of the finest of these appeals is that of King George V of England:

"The foundations of national glory are set in the homes of the people. They will only remain unshaken while the family life of our race and nation is strong, simple and pure."

The weakness of these appeals is revealed by the aphorism, "Generalia non pungunt." A race noble enough to be moved by these high motives would not need them to deter it from this great sin against nature. A man will dodge a tax, who would not defraud in a more personal dealing. The ethical aspect of this problem must lead the forces which may be marshalled against the foul sin of Onan. In this question the teaching of

the Catholic Church is very clear. Let us first examine Onan's deed as narrated in Genesis, XXXVIIII, 8-10:

"And Judah said unto Onan: Go in unto thy brother's wife, and perform the duty of a husband's brother unto her, and raise up seed to thy brother. And Onan knew that the seed should not be his; and it came to pass, when he went in unto his brother's wife, that he spilled it on the ground, lest he should give seed to his brother. And the thing which he did was evil in the sight of Yahveh: and he slew him also."

Onan committed two evils. He might have obtained relief from the obligation of the levirate by due process of law.

The levirate existed among many peoples long before the epoch of Moses. The Law of Moses codified many existing laws. Deuteronomy, XXV, 5-10, offers a relief from the obligations of the aforesaid law. Some relief must have coexisted in all epochs of the law. Onan sinned against justice in that, having taken the woman to wife, he unjustly deprived her of issue. But the purpose of the Scripture in recording the revolting means which he used is not so much to condemn the unjust motive of the deed, but to establish the abominable character of the deed itself. It is obvious from a reading of the text that the motive is recited merely to introduce a deed which is intrinsically wrong. If Onan's frustration of nature were an indifferent act, made evil by its unjust motive, it would be corrigible. The woman might appeal to authority, the injustice might be corrected by a message from God. But the spirit of the narration compels us to visualize a monstrous, unnatural crime, a deed that polluted the earth, and drew swift vengeance of God upon the unnatural monster. This obvious sense of the passage is confirmed by reflections upon all such deeds. Directly to frustrate nature in such a process is to revolt against the Creator's dominion over life. The law of reproduction of the human species is more than mere animal copulation: the immortal soul has a part in it. It is a subtle process, a joint causality of God and man, by which immortal souls come into being. The laws therefore governing this function are adequate to the high nature of man. Man should not exercise his powers as an animal, but as a rational animal. The great end for which God made man male and female is the propagation of the species. All other ends are subordinate to this chief end. When the human species shall have reached that point of its development which the Creator fixed as the limit, then sexual functions shall cease:

"For in the resurrection they neither marry, nor are given in marriage, but are as angels in heaven." Matth. XXII, 30. Out of the cumulative teaching of God the certain ethical law is established by the Church that no voluntary use of the sexual powers is ever lawful save in marriage, and no use of the foresaid powers in marriage is lawful in which the course of nature is frustrated by man's wilful act. The condition of nature may render the copula ineffectual as in the aged, during pregnancy, and in the barren, but man may never pervert the act from its natural course. The end which entered into the great Architect's plan of nature is so essentially bound up with the act, that wilfully to exclude it deprives the act itself of its right to be. This law runs through the whole course of human

life and in all its conditions: at no stage of life, and in no condition of life may the copula be perverted from its natural course. The control of the act is not left to man; it resides in nature. Nature may destroy human life, or cut off human life in its origin, but man may not do either. When a man and woman are joined in the copula in accordance with the great finality of the act, even though they be conscious that their particular copula, through natural causes, shall not produce life, they are also conscious that they lawfully participate in an act which in its course in humanity reproduces the species. There is a solidarity of their act with the great sexual function of the human race. The Creator's law contemplates the carnal union of man and woman in the same respect. When man and woman therefore lawfully contemplate to use their sex function they contemplate an act ennobled and santified by what this act of the human species effects for the human species. They contribute their part, and participate in the great blessing of fecundity by their solidarity with the race. The moment that the great end of the use of marriage be wilfully excluded, then the act becomes impure, meretricious, unnatural.

In the year 1851, the following propositions were submitted to the Congregation of the Holy Roman and Universal Inquisition:

"Judgment of the Apostolic See is sought touching the theologic censure which the following propositions merit:

"1. For just reasons it is allowed to the married to use marriage as Onan used it.

"2. It is probable that such use of marriage is not forbidden by the law of nature.

"3. It is never advisable to interrogate husbands or wives touching this matter, even though it be prudently feared that the married are abusing their marriage."

On the 21st of May, 1851, the aforesaid Congregation delivered its answer:

Touching Proposition 1.: It is scandalous, false, and contrary to the natural law."

"Touching Proposition 2.: "It is scandalous, false and also implicitly condemned by Pope Innocent XI, (Proposition 49)."

Touching Proposition 3.: "The proposition as enunciated is false, excessively lax, and in practice dangerous."

The following quotation is from Dr. Bolt, M. D., Gr. P. H. in Abt's Pediatrics, Vol. 11:

" 'Birth control' is simply a refined twentieth century paganism with regard to the undesired child, which (paganism) seeks in the guise of humanity and the argument of economic necessity to obtain the maximum of sexual stimulation without incurring the difficulties and responsibilities of parenthood. The only 'birth control' that can be considered really moral is strict continence, which in theory, at least, has been held by the Jewish and Roman Catholic churches for centuries as a protest against 'pagan practices.' "

Of course Dr. Bolt means not perpetual continency, save in unusual cases. Seasonal continency restricting coitus to the monthly immune periods is strict continency.

On Nov. 8, 1924, at London, Lord Bertrand Dawson, President of the Medical Society of London, a powerful advocate of birth control, gave as the reasons of Birth Control, (1) the increase in population, (2) the parents' desire to give their children the best opportunities, (3) the desire of women to play a greater part in public life.

We have shown that the first is not a reason, and that in actual life it never motivates Birth Control. The second reason is purely materialistic, and sets aside a law of nature for a probable temporal advantage. Under that head we might refuse all charity to the poor, all philanthropic work in order to have more to expend on our children, and to leave them a larger inheritance. The third reason is the curse of our times. The charm of woman and the true sphere of woman disappear in the march of our materialistic age. A mannish, coarse, immodest "rag and a bone and a hank of hair" replaces the woman idealized by St. Paul. The new woman is coarsened by selfishness, by morbid artificiality and calculation in the sphere of sex.

Lord Dawson declared:

"Sex love, apart from parenthood, has a purpose of its own. It is something to prize and cherish for its own sake and because it is essential to health and happiness in marriage.

"I have often had reason to reflect on the hypocrisy which is pushed on clergymen who are in love. They have the same passions and practice them with the same fervor that the rest of us do, yet their pulpit duties are making them condemn sex love."

"This generation is not materialistic or immoral. Camaraderie and friendship between the sexes is a healthy feature of present day life.

"This generation is bewildered by the rapid development of material forces and its thoughts and standards are different.

"Church authorities evade the real problem. They half apologize for sex love or seem to ignore the existence of this dominating force in the world.

"But what about the glow of ardent love between a man and a girl in the growth of their mutual passion? What about the caresses of their courtship and the delights of sexual completeness in marriage? That is a moving force and man glories in its possession.

"Why not take account of it? Why apologize for it?

"If to give a physical expression of a man's love for a woman is wrong, then some sound reason must be given why it is wrong. Up until now there have been no reasons forthcoming but only unreasonable condemnation."

There are many sophisms and some open falsehoods in Lord Dawson's speech. The consummation of conjugal love in circumstances wherein nature makes conception impossible, is lawful. But the conscious prevention of conception introduces into the conjugal relation a brutal, selfish, unnatural element which converts the act into virtual masturbation. To have

any point his phrase "sex love apart from parenthood" must mean "sex love which wilfully excludes parenthood." Now on that basis how will he condemn promiscuous free sex relations? According to him the act is healthy; his contraceptive measures protect the woman. Why is it forbidden? He may say that coitus is a proper exclusive good of a necessary state of life. This is well said. But what is the great determining reason that moved the Creator to make man male and female? Surely it is propagation. Propagation is proclaimed, and coitus is connoted in the great blessing: "Increase and multiply." The state of marriage, therefore, has exclusive right and control of coitus; and it has that right in virtue of parenthood. Now to thwart in the state of marriage the main end for which the state is ordained is against the mind of Him who ordained the state, and against His law immanent in nature. Parenthood is not "apart" from a coitus naturally sterile; for when it proceeds according to nature's laws there is a consciousness in the authors of the act that they participate in the great holy function upon which rests the life of the human race. Their reverence for the holy laws of nature helps to guarantee the continuity of the human race. The consciousness of the sublime purpose of the conjugal act never dies out of the human soul.

Touching the next argument of Lord Dawson it is to be denied on the highest authority that sexual continence be injurious to health. Moreover, even if such physical ill should follow upon the suppression of sexual desires it would not reverse the value: the spiritual value always outweighs the physical. St. Paul trained his body not for the Olympic games but for the ascendancy of the spirit.

Happiness in marriage is not found through onanism.

I am amazed that Lord Dawson uses the argument against the clergymen. That clergymen have the basic virile sexual power is at once granted. But that they practice no restraint, and hypocritically condemn Birth Control "to hold their job", is a foul calumny. By what means does Dawson claim to have come into possession of this fact? We are willing to believe him when he avers that he practices Birth Control in order to cloy his passions, but how knows he that the clergymen practice their passions "with the same fervor"? Of course he is speaking of married clergymen, for whom the author has no brief; but it seems unworthy of the King's Physician to bring such a charge against the Protestant clergy of England without adequate proof.

Not even Satan would bring such accusation against the Roman Catholic Clergy, whose glory is a strict celibacy.

To say that the present age is not materialistic or immoral is to belie contemporaneous history. In an address to the College of Cardinals on Christmas Eve, 1920, Pope Benedict declared that five great plagues afflict humanity. The first is rebellion against authority. The second is an unprecedented hatred between man and man. The third is an abnormal aversion to work. The fourth is an excessive thirst for pleasure as the great aim of life. The fifth, a gross materialism, which denies the reality of the spiritual in human life. The Hon. James M. Beck, Solicitor General of the United States, reviewed the venerable pontiff's statement in the Sep-

tember issue of the American Bar Association and heartily endorses the Pope's opinion. From incontestable data the able lawyer proves that these plagues operate in the whole world.

"Of the last count in Pope Benedict's indictment I shall say but little. It is more appropriate for the members of that great and noble profession which is more intimately concerned with the spiritual advance of mankind. It is enough to say that, while the church as an institution continues to exist, the belief in the supernatural and even in the spiritual has been supplanted by a gross and wide materialism."

The rest of Lord Dawson's declaration is not logical reasoning but maudlin sentimentality, which condones free love. Most of the caresses of courtship are fornicarious, inchoate or consummated. Sexual completeness in marriage is a conjugal embrace in which nature is not frustrated.

"To give a physical expression of a man's love for a woman" may be a kiss, an embrace, a pressure of the hand or it may mean coitus. Lord Dawson can not deny that such physical expression must be strictly controlled. Even to press a woman's hand may be a mortal sin: the circumstances of the person and the motive determine the quality of the act. To perform coitus outside of lawful marriage is always a grave sin: to perform it unnaturally in marriage is an equal sin.

One of the most common means of contraception is coitus interruptus, or withdrawal. This is the identical method of Onan. The copula is interrupted before ejaculation, and the seed is prevented from entering the female genital tract. This perversion of nature is often stated by the common people as "being careful". Others will declare that they wasted the seed, or that they did not perform their marriage in the right way.

Touching this defrauding of nature Malchow says:

"Whatever the conditions may be that prompt a seminal emission, if it be not deposited within the female receptacle, the mental gratification will not be complete and manhood's desire will not be fully complied with."

"The widely prevalent practice of yielding to desire and inviting a state of sexual excitement, though not completing the act in a natural way, but suddenly terminating it by withdrawal before the critical moment arrives, is undertaken with a willful determination to prevent the possibility of resulting pregnancy.

"The sensations of excitement are so alluring that it is difficult to forego the incidental pleasure, and it is by a prearranged plan that the actions are undertaken and governed.

"A reliance must be had upon the man, for on him depends the carrying out of the plan.

"As the results of this practice are somewhat different in the female than in the male, some women may, after a time, come to be a party to the procedure more from a desire to please than from personal gratification derived, for they tend to become not only indifferent but are actually disgusted and have it over with as quickly as they can, with the feeling of performing a disagreeable duty.

"The effect upon the man who assumes the responsibility to thus 'care' for the woman, is very largely the same as that which results from any other method of artificial orgasm.

"Manhood rebels against an unnatural interference with a sacred right, and the repeated outrage of manhood cannot be salutary but must be detrimental.

"In view of the fact that any seminal emission that is not within the vaginal passage becomes disgusting to a normal man, however effectively it may allay excitement, the practice can in no sense be ennobling, but must detract from masculinity.

"The inevitable consciousness of lustful selfish indulgence predisposes to a disturbed mind and, instead of developing harmony, causes discord.

"The climax of the sexual act is in itself involuntary, but by training and an effort of the will, the orgasm may be hastened or retarded.

"Since personal pleasure alone is sought, the orgasm is postponed as long as possible, but the intensity of the emotion prevents the limit being accurately measured, and so it sometimes happens that a portion of the emission inadvertently finds its way into the vagina.

"This difficulty to control the existing condition partially accounts for the frequency of artificial conceptions.

"The constitutional effects of this practice in the man are usually not greatly unlike those of natural copulation, but the restriction, together with the comparative passivity of the woman, greatly detracts from the gratification.

"At all events, the beneficial effects cannot be compared to those of normal coitus.

"Orgasm in woman is usually of slower development than in man, and, like all involuntary acts, is capable of being more or less modified by the will.

"When coitus interruptus is intended there will naturally be a lack of eagerness on the part of the wife and, in consequence, this stage is usually not reached at all by her.

"Were the woman to display a natural ardor and act in accordance with its inclination, it would be difficult for the man to effect a timely withdrawal, and so she assumes a careless and passive attitude which results in a failure to reach the climax.

"She takes some part, passive though it may be, in whatever preliminaries there are, and consciously submits to the maneuvers undertaken with perhaps an antagonistic mental struggle, but with a resultant circulatory change in the genitalia.

"She is agitated by emotions which are a possible mingling of fear and desire, and her perturbation, instead of being relieved by an explosive orgasm, is intensified and turned into disgust by the revolting sensation of an excretion deposited upon her exterior.

"Instead of relaxation with a body tingling under an invigorated and equalized circulation, her rest is disturbed by undue tension, her mind filled with reproaches and her senses disgusted, while outraged but kindly nature struggles to restore tranquillity.

"What she deems a sacrifice has failed to satisfy her consort, brought upon herself a loathing for the things that she should cherish, and until her sex again asserts itself she feels dissatisfied with life, considers herself a martyr and marriage a failure.

"If she be fortunate enough to have previously experienced the profound effects and sensations of physiological copulation, her recurrent cycle of physical fitness awakens memories that overshadow and blot out her disappointment; but if she has no knowledge of these and there be frequent repetition of acts that give no pleasure and satisfaction, she gradually drifts into a life of increasing miseries.

"The unpleasant effects and the uncertainty of a timely interruption of coitus have led to the use of other and various measures for the prevention of conception, the most common of which are:

"1. The use of condoms.
"2. The employment of douches.
"3. The insertion of suppositories.
"4. The injection of antiseptics.
"5. The wearing of sponges and pessaries.

"The condom, or sheath of thin rubber, is in extensive use and commonly sold 'for the prevention of disease only.'

"It is a sack of thin rubber which is drawn over the male organ preparatory to copulation, and besides detracting greatly from the pleasure and satisfaction derived, is not always at hand, and when so, not easily and agreeably adjusted, and is liable to burst under the force exerted, which, of course, destroys its efficacy.

"Douches are in common use.

"Water of different temperatures, and sometimes with the addition of an antiseptic or acid, such as vinegar, is used with the hope of washing out or sterilizing the seminal fluid.

"The walls of the vagina are normally in contact with each other and their mucous lining is thrown into numerous folds, thus making a thorough irrigation somewhat difficult.

"The activity of the womb during the orgasm permits of an immediate entrance of a portion of the vital fluid into the organ, which cannot then be reached with the ordinary methods employed.

"These, together with the natural tendency to rest after the act is completed, and the indisposition of the woman to bother with the inconvenience of its use, help to render the procedure problematical.

"The temperature of the water, the strength of the solution, the implements used and the carelessness of administration not infrequently cause local injury.

"Various suppositories and injections into the vagina, containing what is meant to sterilize the semen, are introduced into the vaginal passage prior to the act.

"It should be remembered that whatever is sufficient to destroy germs is also strong enough to act injuriously upon the tissues in which the germs thrive.

"Soft rubber 'womb supporters,' or 'night caps,' which are intended to fit over the neck of the womb; stem pessaries of rubber or aluminum, to be inserted into the canal of the cervix, and sponges with a string attached to facilitate removal, are often used to prevent entrance of spermatozoa into the uterus, and left for a varying period.

"The ordinary woman is not able to insert one of these instruments with any degree of accuracy even if she has been instructed how to proceed, for it requires not only a knowledge of the parts but some skill to properly adjust a pessary, and this is not possessed by either herself or husband.

"The upper part of the vagina is spacious and a sponge of ordinary size could easily be pushed beyond the mouth of the womb by the male organ, and probably this is what usually happens.

"Even if those articles which are designed to serve as an impediment to the passage of the semen into the womb are properly used during intercourse, there still remains the possibility of pregnancy after their removal, if spermatozoa are present in the vagina.

"Stem pessaries are liable to cause inflammation, and any foreign body in the vagina tends to injure the male as well as the female by the friction incident to the movements; but notwithstanding the inconvenience of their use and their failure to positively insure security, they nevertheless largely counteract the fear so generally entertained, and are more or less widely used.

"Doubtless one or another of the foregoing methods are at some time or other employed by many women who are fearful of exposure, and we cannot shut our eyes to the fact that they are more or less successful in accomplishing their purpose.

"One has but to note the numerous advertisements of medicines for the relief of suppressed menstruation to be convinced that their use at the present time is very large.

"There is no known medicine which, when taken into the system in non-poisonous doses, has a sufficient specific action on the womb to cause this organ to empty its contents when pregnancy has begun in a healthy woman who has not previously miscarried.

"These so-called monthly regulators contain drugs that have a purgative effect and act more or less violently on the pelvic viscera, and as the womb is placed close beside the rectum it is liable to some disturbance when this viscus is greatly irritated.

"That miscarriage is sometimes produced by enormous doses of such drugs cannot be denied, but their action is not upon the womb alone, but is the result of constitutional disturbance, and their use is further dangerous in that they establish a predisposition to miscarry that makes it very difficult for a woman to subsequently bear a child if she so desires and has once miscarried.

"Very often these regulators are apparently effective when pregnancy does not really exist, and the suppression is caused by the fear of the woman who has been exposed and whose mental condition of concentration is itself sufficient to delay the flow."

Sturgis:

"There is a constant hankering for more intercourse. This inordinate desire gives rise to more frequent copulation, until hyperaesthesia is set up in the prostatic urethra, which is thought to be relieved by more coitus, and thus a vicious circle is established; the more the irritation and the

greater the irritation, the more the desire for coition." Bergeret, Al. Mayer and Devay declare that the ejaculation of the seed within the genital canal of the woman soothes and benefits the woman. Even the pronounced Freudian, Vecki (Sexual Impotence) declares:

"Matters are different concerning the woman: she is sometimes in the midst of a most intense orgasmus venereus when the cessation of the friction occurs suddenly, and this may cause disturbances in the nervous as well as in the sexual system; for according to the present state of our experience, it must be assumed that the effect of an abnormal act is injurious—*i. e.*, if the act has not been continued until the satisfaction of the sensation produced by the ejaculation is experienced. The explanation of this is that if the contraction of the muscles does not take place, the genital tube remains surcharged with blood; the hyperemia subsides but slowly, and may be the cause of changes in the tissue, or a genital derangement."

Prostatic derangements are often caused by withdrawal in coitus. The worst effects are psychic. The principals of the bad habit lose respect for each other; they become sexually cloyed; a psychic lassitude dulls their life; selfish animal gratification excluding everything spiritual is the only bond of attraction. Remorse is often present: outraged manhood and outraged womanhood cannot remain always dormant. Bangs, Max Hühner, Krafft-Ebing and many other eminent authorities attest the evils resulting form coitus interruptus. Max Hühner, (Disorders of the Sexual Function) declares "that there is hardly an organ in the body whose functions may not be deranged through reflexes from the genitals arising therefrom."

Biologists locate the genito-spinal nerve center which controls erection and ejaculation in the spinal cord at the level of the fourth lumbar vertebra. The libidinous impulse from the brain acts through the aforesaid reflex center. The center dilates the arteries of the penis producing turgescence; the organ becomes rigid, elevated and tense. The mucous glands of the urethra pour into the urethra the alkaline secretion which neutralizes the acid in which the spermatoza can not live. If coitus follows upon erection the spermatozoa elaborated by the testicles pass out through the vasa efferentia into the body of the epididymis; thence through the vas deferens they are carried to the seminal vesicles, whence the semen is poured into the urethra by mans of the ejaculatory ducts. It receives vitally necessary secretions of the epididymis, the seminal vesicles, the prostate, the glands of Cowper, and the glands of Littré.

In venereal excitement the verumontanum becomes enlarged, and it is supposed by some that it functions to prevent the semen from flowing back into the bladder. This is now denied by many. No such tendency to "back fire" is probable. The verumontanum is an erogenous zone: one of the worst forms of masturbation is to titillate it with a catheter.

In coitus the nervous excitement is distributed over the entire vasomotor system of nerves. The pupils of the eyes dilate, the conjunctiva is congested, the heart palpitates, the respiration is greatly accelerated. In

the male coitus is accompanied by an intense pleasurable feeling both psychic and physical. Sexual pleasure finds its culmination in the act of emission of the seed. Thereafter the erection subsides, the excitement gives way to a pleasurable languor which invites to slumber.

As a rule the woman experiences psychic happiness in the embrace of the man she loves. She loves to be loved. Her physical orgasm comes slower, and is greatly dependent on psychic influences. Her power of inhibition is stronger than the inhibitory power of the male. A wife is gravely unjust if she wilfully diverts her mind from its proper cooperation in the lawful conjugal act.

Psychic impotence is sometimes found in the male, but psychic frigidity is far more frequent in the female. In the male it prevents proper penetration and ejaculation: in the female such frigidity would not necessarily prevent conception; but it would exclude the female orgasm and render impregnation less liable.

When normal coitus proceeds to its natural end the seminal vesicles completely empty themselves; the prostatic urethra deplethorizes itself and the erection centre is left "in a condition of complete quietude." Withdrawal in coitus prevents this harmonious effect. Consequently the desire for coitus becomes excessive; the sexual apparatus becomes weakened, the urethra and verumontanum are in a continual state of irritation. It is beyond doubt that enlarged prostates are often caused by masturbation and interrupted coitus.

During coitus there is in the female a hyperemia of all the pelvic organs. Normal coitus with orgasm effects a deplethorization; and the woman experiences a delightful feeling of relaxation and peace which invites to sleep. The interruption of coitus either hinders the female orgasm or renders it imperfect. The unrelieved hyperemia of the organs acts disastrously on the woman's mind and body.

The Neo-Malthusians are opposed to coitus interruptus and to the condom or sheath:

"The first of these modes (coitus interruptus) is physically injurious, and is apt to produce nervous disorder and sexual enfeeblement and congestion, from the sudden interruption it gives the venereal act, whose pleasure moreover it interferes with. The second, namely the sheath, dulls the enjoyment and frequently produces impotence in the man and disgust in both parties; so that it also is injurious. . . . Any preventive means, to be satisfactory, must be used by the woman, as it spoils the passion and the impulsiveness of the venereal act if the man have to think of them." (Elements of Social Science by Dr. George Drysdale, pp. 349, 350)

Setting aside medical means employed by the physician the preventive means which the man might employ are withdrawal and the sheath or condom.

Against the use of the sheath the following arguments are valid.

1. It blunts the sensation which nature intended in coitus; it prevents the physiological benefit of the absorption of the secretions; flesh does not touch flesh in the wondrous union of two in one flesh; the con-

jugal act becomes merely an act of masturbation with a rubber or membrane-sheath; the glove-fitting sheath binds and compresses the turgid gland of the penis, causing a painful and harmful sensation; the sheath is liable to burst under the strain. Owing to these materialistic considerations the usual procedure of the male is to withdraw.

We omit here the ethical reasons against this practice. The data which we have already given are our plea against all methods of artificial Birth Control.

It seems incredible, but there is a writer, J. P. Gair of England, who advocates psychic control of the seminal emission. His method is not coitus interruptus, which he condemns. In his fanciful method there is no emission, because he controls it by sheer will-power. The intromission of the penis is effected as usual, but instead of the usual movement and vigorous friction of the penis in the sensitive vagina, there is a state of quiet. The woman needs not inhibit her orgasm, but the man controls his by bodily quiet and mental control. This method is a myth. No normal man shall be able so to excite nature and inhibit its natural function. It would be an intolerable torture to both principals, comparable to the cup of Tantalus. The surcharged male organs, finding no relief would compel the orgasm either within or without the body of the woman. Moreover the resulting nervous disorder to both *conjuges* would be grave.

A wider field of contraceptive devices lies open to the woman. The vaginal syringe is perhaps the most usual means. The injection must be warm. Quinine, salt or vinegar are mixed in the warm water. We do not believe that these ingredients in proper proportions would exert any deleterious action on the mucous membrane of the female genital tract. An occasional vaginal douche for a married woman is commendable.

In the case of a young unmarried woman it should never be employed save by order of a physician and in the hands of a competent nurse.

Too frequent use of the vaginal syringe is injurious: it deranges the natural exudate required for the functions of these organs. It is not required after menstruation: nature provides what is required.

The external female genitals in menstruation and thereafter should be carefully washed with very warm water. The vaginal douche is not always effective to prevent conception. A portion of the spermatozoa may remain in some sheltered portion of the genital tract and thus continue their way to meet the ovum. Moreover, to be in any degree effective the syringe must be used immediately after coitus. At such moment the woman is little disposed to arise and undertake the labor of the vaginal syringe. This method inflicts much discomfort upon the woman. At a time when nature impels to soothing, blissful sleep, she must quickly arise, perhaps in a cold room, and provide warm water for the disagreeable process of vaginal douching.

Pessaries are also used. A pessary is an instrument usually made of rubber which is placed in the vagina for various purposes. One of its chief legitimate uses is to support a deviated uterus. Onanists sometimes use a cup-pessary, the top of which is cup-formed to fit over the os uteri, the object being to prevent the entrance of the spermatozoa into the uterus.

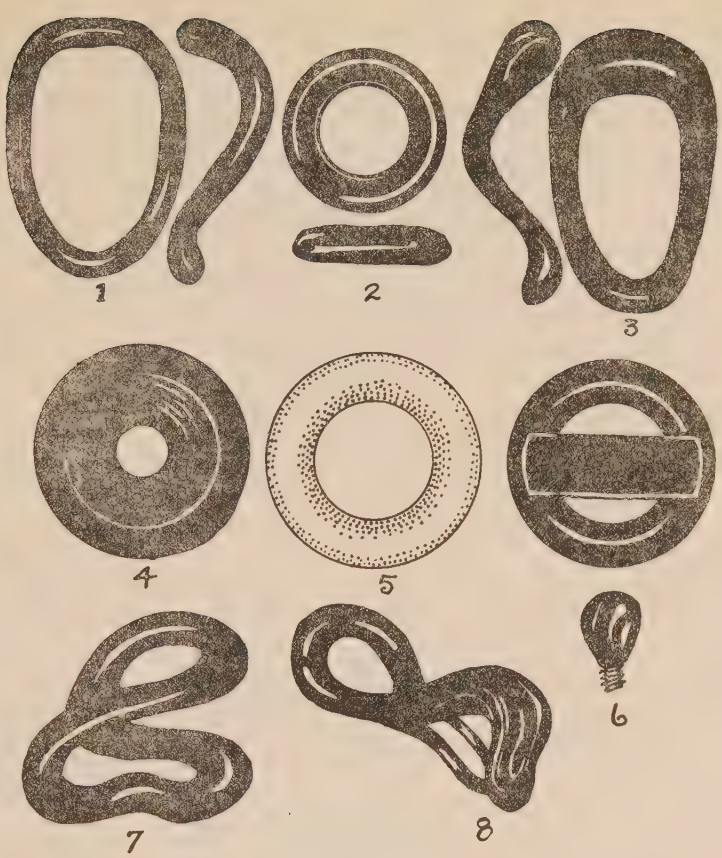

Fig. 99—Types of Pessaries. (Lewis and de Roulet)

1. Hodge retroversion.
2. Hard Rubber Ring.
3. Thomas retroflexion.
4. Biconcave Disc.
5. Soft Rubber inflated Ring.
6. Menge retroversion and prolapse.
7. Gerung anteflexion.
8. Skene anteflexion and cystocele.

This method is open to many objections.

1. The pessaries are not durable, and cost more than a dollar each.
2. They can not be efficaciously adjusted by the woman herself.
3. It is practically impossible to select the proper size.
4. They are not effective: they may slip or burst during coitus, or the spermatozoa may enter after their removal.

Others use a medicated fusible vaginal suppository, which melting, is supposed to liberate a plasmolyzing agent to kill the spermatozoa.

This method is expensive, ineffective, unhygienic. There is danger of sepsis from the suppository or from the hand of the woman.

Some onanists plug the cervix uteri with a sponge wrapped in cotton wool and saturated with vinegar and boracic acid.

In addition to the foregoing I present some data from Stopes' *Contraception,* published in 1927.

The book bears the endorsement of Sir William Bayliss, M. A., D. Sc., F. R. S.; Sir James Barr, M. D., LL. D., F. R. C. P., Ex-President, British Medical Association; Christopher Rolleston, M. A., M. D., M. R. C. P., County Medical Officer of Health; and of Jane Hawthorne.

"The theoretically perfect contraceptive should be so unobtrusive as not to obtrude on the consciousness of either party during or immediately after the coital act. In my opinion, in coitus, any mental or psychical injury is quite as harmful as any physical one." (Dr. Stopes)

Stopes admits that a universal and infallible contraceptive has not yet been found. She rightly declares that in perfect coitus there must be "natural and complete contact between the tumescent sex organs; hence from the nature of things all sheaths and coverings worn by the man have serious disadvantages." *(Contraception,* p. 14.)

"In the great variety of contraceptives in use or which could be imagined, one or other of three essential characteristics are necessarily involved:—

"(1) That the ovum itself is rendered irresponsive or incapable of fusing with the sperm.

"(2) That the sperm is prevented from meeting with the ovum.

"(3) That the contraceptive renders the ejaculated sperm infertile." (Op. cit. p. 14)

Stopes groups true contraceptives as follows:

"A. Actions or modes of procedure by either sex not involving the use of chemical substances or appliances of any sort.

"B. Actions or modes of procedure involving the introduction of chemical substances with the supposed intention of incapacitating the spermatozoa so that they do not fuse with the ovum.

"C. The use of appliances by either sex to prevent the spermatozoa coming in contact with the ovum.

"Under these various headings I shall include descriptions of all important methods in which reliance is placed by anyone, even if some of them may appear valueless to a modern trained mind: for all have some social, psychological, legal or medical significance and interest.

"A.—Actions or modes of procedure by either sex not involving chemical substances or appliances of any sort: many of these are mistakenly described as 'natural' by persons prejudiced against the application of science to human breeding:—

"(I) *Actions by the female:*

"(1) Extreme passivity in order to control her own orgasm so that it does not take place.

"(2) Placing the body in positions likely in her individual case to prevent contact of the penis with the cervix.

"(3) Sitting upright the moment after ejaculation has taken place and coughing violently, or taking some other exercise to contract the pelvic muscles.

"(4) Prolonged suckling an infant or child.

"The above methods (all presumably dating from prehistoric antiquity) are still used even in this country, and sometimes relied upon by

individual women without failure. It is doubtful whether such women would not prove to be of a naturally infertile type. They offer, however, no general and reliable security to the average woman.

"(II) *Action of the Male:*

"(5) Extra-vaginal union without normal penetration.

"(6) Vaginal stimulation consummating the ejaculation after withdrawal, commonly called '*coitus interruptus*,' sometimes called *onanismus conjugalis*.

"(III) *By both Parties:*

"(7) Control of the coital act so that ejaculation shall not take place even after prolonged union. Known as 'Male Continence,' 'Karezza,' and by a variety of other names.

"(8) Seasonal fertility.

"(9) *Coitus intermenstruus*, or restriction of the coital act to certain specified dates in the month, commonly called the 'safe period,' or *tempus ageneseos*.

"(10) Mutual and complete abstention from the coital act.

"In addition to the above there are still more aberrant practices and the use of other female and male openings which are entirely to be deprecated as pernicious and abnormal and will not be discussed here, although practitioners should be on their guard against their use by their patients and warn them of the nervous and other harmful effects likely to accrue from their use.

"B.—Chemical substances introduced with the intention of incapacitating the spermatozoa:—

"(*Note:* So far as I am aware such substances are never introduced into the male organ, but are always introduced into the vagina in one form or another. I make this apparently obvious comment because one man approached me with an absurd thing he wanted to patent which should inject destructive chemicals up the male urethral tube! Needless to say I did all I could to discourage him from proceeding with his patent).

"The commonest chemical substances introduced into the vagina are:—

"(11) Quinine compounds in a variety of forms.

"(11*a*) As a powder.

"(11*b*) As ointment on a sponge, plug, cap, or merely rubbed round the cervix.

"(11*c*) In a pessary or suppository contained in a matrix of low melting-point wax, such as cocoa butter, or gelatine.

"(11*d*) Dissolved in or mixed with oil which is injected by a small specially constructed syringe.

"(11*e*) Various suppositories containing chemicals.

"(11*f*) Greasy suppositories with chinosol.

"(12) Alum in powdered form.

"(13) Common salt in solution as a douche.

"(14*a*) Vinegar and water, or lactic acid, &c., as a douche.

"(14*b*) Lactic acid in a 'cram' or in tablets.

"(15) Disinfectants of one sort or another in the form of a douche.

"(16) Plain cold water in the form of a douche.

"C.—Appliances used by either sex to prevent the spermatozoa coming in contact with the ovum:—

"(I) BY THE MALE:—

"(17) Condoms (popularly called 'French letters').

"(18) Pin or stud-like apparatus supposed to close the urethra in case unpremeditated ejaculation took place before coitus interruptus was accomplished.

"(II) BY THE FEMALE:—

"(19) The sponge, used with or without chemical solutions, soap powder, or other potential spermaticide.

"(20) Soft plugs.

"(21) Special tampons.

"(22) Dome-shaped cap-like pessaries designed to fit over the cervix in a great variety of designs and construction.

"(22*a*) Caps of rubber.

"(22*b*) Caps of metal.

"(23) Rubber cap-like pessary similar to above, but covered with sponge on the convex surface.

"(24) Flat lens-shaped cap (Dumas') designed to close the end of the vaginal canal.

"(25) Hemispherical-shaped caps with spring rim designed to close the end of the vaginal canal: the 'Dutch' cap.

"(26) Cap-shaped pessary with separate ring and soft detachable cap, called the 'Mizpah.'

"(27) 'Matrisalus' pessary, rubber cap of turtle-back shape.

"(28) Balls of soft rubber.

"(29) Large membranous or rubber sheath, or 'Capote Anglaise,' calculated to cover the internal female organs completely, acting like the male sheath in preventing contact of the seminal fluid with the vaginal surface.

"(30) Springs, studs, metal buttons, the 'Gold Spring' or 'Wishbone' pessary, metal cigar-like structures in a great variety of shapes and forms, designed to enter the cervical canal and some also to fill the cavity of the uterus.

"In individual cases and for individual circumstances any one or other of the above may be found from time to time advisable, but for regular use, particularly for general use on the part of *healthy* and normal persons, only one or two of the above methods are required. Many are actually harmful." (Op. cit. pp. 46-53)

Passivity and control of orgasm by the female is unethical, a torture to the woman, unhygienic, a disappointment to the man, and although it lesseps the liability of conception it does not inhibit it.

Some physicians deny that the glans penis ever enters the external os of the cervix uteri. However the weight of probability is in favor of such

penetration. Such coitus promotes conception. But such fact is negligible in the general question of human conception.

The expedient of sitting up and coughing, etc., is too ridiculous to merit consideration. Though foolishly ineffective it is unethical in intent.

Prolonged suckling of the child is not an absolute contraceptive, but it lessens the liability of pregnancy, and is a lawful and noble act.

Stopes notices a form of sexual perversion which is effected by extra-vaginal contact without normal penetration. This is often practised by persons outside of marriage. The virgin in this act loses not her physical virginity, but loses her moral virginity. In the rarest of cases conception might result. The penis simply comes in contact with the labia without entrance into the vagina.

This act is a sort of sodomy; it tantalizes male and female, and produces very harmful nervous reactions. If it be a mere contact without effusion of seed it is in marriage permissible.

The coitus interruptus or withdrawal is the most prevalent mode. In my experience, I believe that 90 per cent. of the confessing onanists were guilty of coitus interruptus.

In addition to what I have written on this theme, I add the testimony of Stopes:

"*Harmful Effects.*—Briefly, the effect on the man's nervous system is that, at a moment when the power of thought and central control is or should be in abeyance and his emotions and reflex actions at their freest, he is called upon to exercise careful watchfulness and critical control from the central nervous system. This strain is very great even if successfully accomplished. In addition to this the local effect on his own organ is harmful, because at the time of ejaculation the surrounding gentle support and the general soothing influence of vaginal enclosure and contact are absent. The evil effect on individual men is sometimes so great as to destroy the general health and make them thoroughly nervous and run-down, or to induce more explicit symptoms of neurasthenia and even functional disorders.

"On the woman the effect is harmful if she is of a nervous disposition owing to anticipatory fears of failure. Where this is not so and the woman is placid and satisfied in this respect, it is nevertheless harmful because she is deprived of the full benefit of union. She is in a position comparable in this respect with that of the wife of a man suffering from too hasty ejaculation, of whom Porosz noted that such a woman may suffer neurasthenia even approaching insanity, and be cured when her husband was cured, as she needed the complete union. The woman is also deprived of the possibility of the man's penis interlocking with the cervix (which alone makes an *absolutely* complete and perfect union).

"The effect on the woman's feelings at the time are rather well described by a patient of Booth's, who 'confessed the practice, and when pressed for a description of her feelings after the act, replied that the only way she knew how to express it was that "she felt like she wanted to sneeze and couldn't." '

"The woman subjected to this process is also deprived of the possibility, after the union has been completed, of the beneficial absorption from the seminal and prostatic fluids. I have many cases of private persons who look upon it as certain in their own lives or that of their friends that not only the orgasm in coitus, but also the presence of the seminal fluids is beneficial to women." (Op. cit. pp. 71-73)

Criminis nefandi rei, qui penem sugunt mihi saepe sunt fassi semine ingesto per os in stomachum se bene affici. Semen sic ingestum physicas vires augere extra dubium est: semen per coitum in muliebrem vaginam ejaculatum sic bene mulierem afficere probabile sed non certum est.

While specific benefit to the woman from absorption of the male ejaculate is not entirely proven, the injurious effects of coitus interruptus is a scientific thesis. The celebrated Dr. Chas. Féré (L'Instinct Sexuel) said of it:

"Coitus interruptus plays a great rôle in the causing of neurasthenia, and especially of sexual neurasthenia: the effect may not be constant but it can not be denied." Kisch, Valenta, Elischer, Graefe, Goodell, Mensinga, Booth, Freud, and Fürbringer declare its injurious effect.

The next method is thus described by Stopes:

"Control of the coital act so that ejaculation shall not take place even after prolonged union. Known as 'Male Continence,' 'Karezza,' 'Zugassent's Discovery,' 'Sedular Absorption,' 'Magnetation,' 'Self-Control,' and by a variety of other names.

"This method consists, like *coitus interruptus,* in the normal and unclothed and unhindered entry of the penis into the vagina, but differs from *coitus interruptus* in controlling the nervous excitation so as never to approach the onset of the orgasm. The union is protracted, and the erection, after being active for a length of time varying from twenty minutes to ten hours, naturally subsides before withdrawal from the vagina.

"NOYES claimed that he discovered it in 1846, and he gave an interesting account of the method, but it was undoubtedly known and practised in the Orient, centuries before his time.

"This SEPARATION of the AMATIVE from the PROPAGATIVE act has *theoretically* much to recommend it, but I do not know of many successful cases, and this is probably due to the fact that the process of normal ejaculation results in benefit to both contracting parties. Men who have not the power to produce ejaculations more often than once or twice a year, however, do exist and in my opinion are commoner than is generally supposed. For such men, possibly, this method might prove useful.

"DR. RUTGERS says, 'Just as it is possible to keep back one's tears when deeply moved, so can some men have prolonged connection by using willpower to hold back emission of semen. This method of intercourse without impregnation has been called carezza or ZUGASSENT'S discovery, and it requires very considerable effort of the will and practice. But this variety of continence can also cause nervous trouble. It may also fail, unless the husband uses condoms, or withdraws if he feels his semen about to escape.' " (Op. cit. pp. 79-81)

This method is said to be practised by the infamous Oneida Community. If the semen be not ejaculated outside of the vagina, the act is not unethical. I have found a rare individual man, father of two boys within his three years of marriage, who declares that he can so inhibit his orgasm. I believe that the number of men of such type is negligible. The normal man is impelled to complete the coital act. Such a tantalizing of nature would torture man and woman and derange nature.

Against the method of restricting the coital act to the immune period Stopes makes a weak and unscientific attack which merits no regard.

Complete abstention from conjugal intercourse is an extreme measure which in extraordinary circumstances may be indicated. By mutual consent after mature wise deliberation it may be entered upon for spiritual, hygienic, or even economic motives. To be ethical it must be attended by abstention from conjugal intimacies which notably move the sexual impulse. It is never rashly to be counseled (I Cor. VII, 5); during the period of sexual vigor it is rarely possible.

Touching the destruction of the spermatozoa by a chemical substance they invent a new term, *plasmolysis*. In plant physiology the shrinking of the cytoplasm in a living cell by osmosis of the water is called plasmolysis. This term they ignorantly apply to the chemical action of certain substances on the male semen. One of the most used spermaticides is quinine. It is used in a variety of ways. Sometimes quinine salicylate is introduced into the vagina in the form of powder. A more general method is to mix the quinine with a fatty base such as cocoa butter or introduce a soluble vaginal suppository made of grease and quinine. Stopes gives a formulary for thirty suppositories:

Cocoa butter	¼ lb.
Borax	5 dr.
Salicylic acid	1 dr.
Quinine bisulphate . .	1½ dr.

Sometimes quinine in solution is sprayed into the womb by a syringe.

There is no evidence that the quinine has a deleterious effect. Stopes however declares that she used the quinine suppositories on herself, and that they made her sleepless. She therefore advises to substitute for the quinine chinosol, which is an oxyquinolin potassium sulphonate. This is cheaper than the quinine suppository.

Powdered alum in various forms is a spermaticide, but its use is very restricted.

I have spoken of the custom of douching after coitus. Stopes declares that much harm is done by douches in which strong disinfectants such as corrosive sublimate or lysol is used. She recommends to mix with the water of the douche common salt or vinegar or lactic acid or listerine. Cold water itself is an effective douche, but it is unhygienic.

I have found in my experience that second in frequency of use after coitus interruptus is the condom or sheath. They are made of the caecal membranes of animals or of rubber. Some cover only the gland: some envelop the whole penis. We need add nothing to what we have written of this abomination.

It is firmly entrenched. It has the endorsement of Kisch, Krafft-Ebing, Sarwey, Iwan Bloch, Freud, Havelock Ellis, Robie, etc.

The insertion of a pin or stud into the male urethra to occlude the semen is not feasible. It seems merely to have been a theory which was never actuated.

The mechanical appliances used by woman are sponges, soft plugs, tampons, cap-formed pessaries, rubber caps, metal caps, caps with metal rings, large vaginal sheaths, intra-cervical springs or studs.

Such is the dreary degrading survey of humanity's revolt against the birth-ordinance of the Creator. What a spectacle to behold woman, the mother of the living, puttering with her genitals to render herself a mere barren instrument of a mere physical union! The Conference of Anglican Bishops rightly dub all the contraceptives "incitements to vice.".

They are in the main unhygienic.

"I have no doubt that prevention of maternity by *artificial* methods invariably produces physical, mental and I think moral harm to those who resort to it . . . I am sure it does harm to both if they both agree to it. The act is incomplete; it is not a spontaneous act; and if the act ceases before the proper crisis, as it were, the nervous system suffers enormously if the habit is continued for long. And the result often is that there is a great deal of congestion produced in the woman, at all events." (Armand Routh, M. D.)

The unethical character of contraceptives has been established by a cumulus of arguments. Indeed if contraception be allowed there is no logical argument against coitus *in ano*. If the vagina and cervix be rendered irreceptive of the male semen they lose their special character. The genital tract therefore functioning in a contraceptive coitus has nothing ethically to differentiate it from the rectal canal. It is endowed with greater sexual feeling, but in the controlled coitus that feeling is repressed. The physical argument is in favor of coitus *in ano*. The semen is readily absorbed by the rectal tract. The orgasm of the man is perfect. In fact, both male and female sodomites confess that the very unnaturalness of the act produces a paroxysm of sexual delight.

The first great argument against all these methods is that they are against the law of nature, and therefore gravely sinful. Moreover, from a natural point of view, they dull the physical sensation, they rob it of its esthetic character, and intrude a sordid, material, calculation into the place of the spontaneity of conjugal love.

It can not be maintained that the frustration of conception be essentially evil. If that were true then, in no case, could it be practiced. Now it is the unanimous opinion of Moralists, and our innate sense of right approves it, that a woman to whom violence has been offered may expel the seed before the fusion of the male and female pronuclei. A man forced by uncontrollable external violence to coitus, may withdraw. A man who constuprates a woman may be moved by repentance at the very moment of orgasm and withdraw. It is evident that the obligation of ceasing his wicked act lies upon him at every moment, even at the moment of orgasm.

We must therefore seek other grounds for the unlawfulness of the frustration of conception.

It is evil because it directly attacks God's great institution, the family.

Darwin, Herbert Spencer, L. H. Morgan, Sir J. H. Frazer, Professor Giddings, and other agnostic ethnologists theorized that primitive man lived in a state of general promiscuity, and by cultured evolution he has come up to his present status.

The studies and researches of Robert Lowie (*Primitive Society*), Bishop Le Roy (*La Religion des Primitifs*), Wissler (*The American Indian*), E. H. Man (*On the Aboriginal Inhabitants of the Andaman Islands*), Rev. Wilhelm Koppers, S. V. D. and Rev, Wilhelm Schmidt, S. V. D. have overthrown the theories of the evolutionist school, and have established the thesis:

1. That a well defined system of morality existed among all primitive peoples;
2. That it had for a basis the concept of religion;
3. That the family was the fundamental necessary basis of society;
4. That a widely disseminated perversion set in as man was multiplied on the earth.

One of the best authorities on one of the most primitive human tribes, viz., the Andaman Islanders writes:

"We have been told that the system of communal marriage prevails among them, and that marriage is nothing more than providing oneself with a slave. But the marriage contract is so far from being a temporary makeshift, which can be disregarded at the will of either one of the two parties, that not even difference of temperament or any other cause can sunder the union. While polygamy, polyandry and divorce are unknown, marital fidelity unto death is not the exception, but the rule. Domestic quarrels, which are of rather rare occurence, are easily settled with or without intervention of friends." (*Op. cit.*)

"With the exception of a few cases in which tribes are asserted to live together promiscuously,—almost all of which assertions I shall prove further to be groundless,—travelers unanimously agree that in the human race the relations of the sexes are, as a rule, of more or less durable character. The family, consisting of father, mother and offspring, is a universal institution, whether founded on a monogamous, polygamous, or polyandrous marriage. . . . There is not a shred or genuine evidence for the notion that promiscuity ever formed a general stage in the social history of mankind. The hypothesis of promiscuity, instead of belonging, as Professor Giraud-Teulon thinks, to the class of hypotheses which are scientifically permissible, has no real foundation, and is essentially unscientific." (*Westermarck,* quoted by Muntsch)

Bishop Le Roy after an experience of thirty-two years with the African Pygmies wrote his conclusions in "The Religion of the Primitives." He declares that "among primitive tribes of Africa, as well as those of other countries, the family is the central pillar with which religion and the whole social life is linked; if the family is solidly established, the tribe is prosperous. But if it breaks up, the tribe becomes weakened; and if, as

happens on the Coast and in European districts, it is dissolved entirely, the tribe disappears."

The French sociologist Le Bon had asserted the existence of general sexual promiscuity among the primitive people.

Le Roy answers him:

"It is possible that this herd-like condition may have existed among some human groups (quelques groupements humains) especially wretched. But before changing such an hypothesis into an incontestable truth, it would be wise to establish it by definite facts. The one certain fact is this, that nowhere in Africa today can we find traces of this promiscuity except in the vast steppes of the eastern and southern zones—among herds of antelopes. As to man, the closer we come towards the people of a general primitive nature (d'aspect général primitif), as are the Negritos and the San, the more evidence we find of family life, of the family precisely as the fundamental, necessary and unshaken basis of society."

In 1908 Georges Noblemaire wrote a fine treatise, *Le Complot Contre la Famille*. Etienne Lamy of the French Academy wrote the Foreword. In his prefactory remarks he declares:

"In our time, rich in imaginary plots, you denounce as the most threatening the plot against the family, the source on which depends the continuity of the species, the first school of the living being, the group with which society begins. The family is the most essential of human institutions. Nothing is in jeopardy as long as it remains intact; everything is in danger as soon as it decays. . . . As the same race, which no longer renews itself in France, is multiplying in Canada, its sterility is not organic but voluntary. This race has been fruitful in France as long as morals and laws united to fortify those social groups which protected the individual."

Our thesis is confirmed by the following convincing testimonial from Rev. Wilhelm Schmidt, S. V. D. published in the Homiletic Review, April, 1927:

"That morality and religion had originally nothing to do with each other; that they became connected only at a later period; that, consequently, there can be no question of religion being the source of morality, and that we are thus justified in assuming the existence of a morality without religion—all these were formal dogmas of Evolutionism, and are believed even today by wide circles. If such claims can be sustained, there would be really no justification for our proceeding further with an inquiry into comparative ethics.

"However, the work we have already accomplished in this field enables us to expose the errors which are involved in these theories, and thereby establish the correct basis for the investigation of this question. In the development of mankind, there are undoubtedly wide stretches embracing not a few peoples wherein any connection between religion (especially with regard to the major gods) has been forced into a dark ineffectual background, or because it issues and has preserved only ritual precepts, or because religion itself has been degraded into the service of immorality. It would be a mistake and foolish to deny the existence of

such conditions or to attempt to minimize them, for any attempt in this direction would only do violence to ethnological facts.

"But what we can assert with absolute certainty and establish by rigid proof is, that *these conditions did not exist at the beginning,* but are the product of later developments. For such conditions are not found among races which belong to the primitive civilizations. On the contrary, among such primitive races we find a very intimate relation between religion and ethics, so that the latter is sustained by the former and finds in religion its basis, its support and its sanction. It is these primitive races that clearly acknowledge a Supreme Being. Of this Being they declare that, inasmuch as He is the Creator of all things and is absolutely good, so also is He the author of the moral law. Being all-wise, He observes all transgressions of this law, and in His justice and omnipotence chastizes the transgressors—either here on earth with sickness and an early death, or in the next life, where men are rewarded or punished by Him according as they are morally good or bad. Such are the beliefs which prevail among the tribes of South Australia (Kurnai, Kulin, Yuin, Kamilaroi, etc.), Semang and the South Andaman Islands, among the Firelanders of Tierra del Fuego, the Negrillos, the Bushmen, and the Ainus."

Conception control is wrong because it is opposed to the divine plan of the family.

Some forms of conception control are directly against the well being of mind and body of the principals. Such is Onanistic withdrawal and spilling of the seed. But if a man by a proper orgasm deposits the seed in the vagina, nature is satisfied. If the seed be thereafter sterilized or expelled, the act is not unhygienic, unless a plasmolizing agent be used which injures the delicate mucous membrane of the vagina or womb. But the act is against the ordinance of God, inasmuch as an act is exercized which was ordained *in genere suo* for propagation, and the end thereof is frustrated.

Since the carnal union of man and woman *in genere suo* is ordained for a certain end, it is controlled by that end throughout its whole course. A copula sterile from any cause may not be wilfully frustrated. Such interference with the course of nature is an act against human life. Life has not begun, but the act upon which human life depends has been placed. Nature has yielded to the principals the use which nature's great contract covenanted. And now nature has come into its right, the right to life.

At times nature's right is in itself inoperative, as in the aged, the barren, the sterile, but no creature may make it inoperative, unless a prior natural right has been violated, as in the case of an unjust copula through violence. Nature may take away life; nature may render birth impossible; but, by his wilful act man may not do either: *agat natura.*

The frustration of conception is a rebellion against the laws of nature. *In se* it is aimed to destroy the continuity of the human species.

In order to prevent a decline in population the human family should produce about three and three-fifths children. Prof. Ellsworth Huntington of Yale and Leon F. Whitney have made researches touching the birth rate of several classes of American women.

Of 2,294 Alumnae of Vassar College the average birth rate per alumna was 1.1.

Of 10,636 graduates of Harvard, the average number of children per graduate was 1.54.

Conception control of itself would extinguish the race.

These destroyers of the human race vaunt themselves as the highest product of humanity and appoint themselves to give laws to the rest of us.

The Sixth International Birth Control Conference, held in New York City in 1925, resolved "that persons whose progeny give promise of being of decided value to the community should be encouraged to bear as large families, properly spaced, as they feasibly can."

Instead of raising the standard of the human race those who promote conception control abandon the world to the less cultured social strata:

"Nature's answer is clear. She says they are unfit. She shows clearly that she prefers the lower classes who live simply, who reproduce more or less instinctively, who do not think about the future of the race or of civilization, but who are carrying the burden of the future in the rearing of children. We may call these people brutish, we may say that they are intellectually inferior, we may hold that they have not risen above the level of instinctive reactions, we may believe that they carry the burden of the future only because they do not know how to avoid it, and because they do not yet feel it to be a burden; but they survive and the future belongs to them.

"People who wish to play so prominent a part in the affairs of their day that they do not find time for family and children, who are unwilling to partake in the struggles and hardships of the common lot, are doomed to extinction. Those who can make the combination of satisfying their ambition and raising a fair-sized family will survive, and though civilization may change under their guidance, I do not see why we should be exercised for fear that it will not be Anglo-Saxon, or Teutonic, or Gallic, as the case may be. If we do not have children it will not affect us or ours, that the present social order which we call Western Civilization will have perished. The people who do survive and carry on will probably develop a civilization which will suit them better than ours. If it is so organized that it has a place for the family and if it rests upon those virtues growing out of the intimacies of family and communal life, it will probably displace ours and survive much longer than ours has, and thereby prove its fitness." (Professor Warren S. Thompson)

Conception control is a vice of narrow, selfish, antisocial minds. It is a monstrous insult to the Creator himself. It is mutual masturbation, a dull, selfish, mechanical, animal pleasure without any psychic element to spiritualize it and ennoble it.

One of the ablest exponents of conception control is G. A. Studdert Kennedy, chaplain to King George of England. On the basis of economic pressure, health, and happiness he insists that conception control, at times, is not alone justified but imperative. He advocates not indiscriminate conception control, but a limitation of offspring adapted to the circumstances of the principals.

"That this kind of selfish and immoral birth control is all too common to-day, and that it leads to the worst possible results both in Family and State is one of the chief reasons why moralists resort to the desperate expedient of attempting to prohibit birth control of any sort. The power to control the incoming stream of life is the most momentous and revolutionary of all the powers that modern research has put into the hands of men and women and therefore carries with it the gravest responsibility. Hitherto the power has been blindly and badly used, and there has been no wide-spread moral teaching about it,—largely because the moralists have condemned the use of the power as evil in itself.

"This has had the worst possible results. Men and women have been driven by circumstances to avail themselves of it but have done so with an uneasy conscience; and the principle, largely unconscious in its operation, that one might as well be hanged for a sheep as a lamb has led to excess and to an open defiance of all restraint that is fatal to fine relations between man and mate." (Rev. G. A. S. Kennedy, *Forum*, July, 1927, p. 13.)

This is a half truth. Any form of conception control has all the evils which he outlines. He tells us that he is one of a family of fourteen children. Is he not proud of the decency and nobility of his good parents? Would he wish rather to remember them as foul condom-using, syringe-using, semen-smeared, selfish creatures, with starved parental impulses and the inevitable look of shame in their eyes as they remembered their desecration of the holy ordinance of God?

We are happy to present here the following statement of Dr. Halliday Sutherland:

"The practice of contraception or birth prevention is unnatural in terms of ethics and unphysiological in terms of biology. As an unnatural act it is in the same category as murder and sexual perversion, because all such acts, if universally practised, are incompatible with the well-being of humanity. Contraception is unphysiological because, apart from preventing pregnancy, it inhibits far-reaching physiological processes which result from normal intercourse, by reason of the absorption of certain vital substances which have a beneficial influence on the metabolism and health of the female. Since there is no known method of birth prevention whereby pregnancy can be avoided without hindering or prohibiting this beneficial absorption, the practice of contraception is unphysiological. Experiments on rabbits have shown that when the female is subjected to truncated intercourse there are subsequent pathological changes in the organs of generation. It is therefore not surprising that the majority of gynecologists should have reached the conclusion, from clinical observation, that contraception is a cause of sterility, or neurasthenia, and of fibroid tumors in women. So far from being beneficial, contraception is positively harmful to women.

"There is no real evidence in support of the assertion that birth prevention benefits such children as may be born. After an exhaustive statistical investigation Dr. John Brownlee ('The Lancet', Nov. 1, 1924) concludes that 'when the data are taken before restriction of birth became a

practical factor, there is no evidence that large families were more unhealthy than small ones, and the statement that it is better to have three healthy children than six unhealthy ones has no apparent foundation.' The health of the children in five hundred very poor families selected at random in Hull was ascertained by Dr. Helen Gamgee. These families were divided into those having over five children and those having under five children. The health of mother and children was found to be better in the large families! After all, the poor are not automatons, and it is curious that birth preventers should have overlooked the simple fact, known to all who have worked amongst the poor, that the many children of a good mother will be better cared for than the few children of a bad mother, wages and housing conditions being equal. The practice of contraception is not likely to engender qualities of self-sacrifice on the part of parents, because contraception is avowedly designed to obviate the necessity for self-sacrifice.

"Birth prevention cannot lead to happiness in marriage, because the practice of contraception injures the minds of men and women. George Bernard Shaw has said that when people adopt methods of contraception they are engaging, not in natural intercourse, but in reciprocal vice. That is the plain physiological truth, and the mutual self-respect of two people is thus at the mercy of an animal instinct, neither satisfied, controlled, nor denied. Once the chance of pregnancy can be safely ignored, there is no natural check on the passions of husband or wife, since they have learnt how desire may be gratified,—either within or outside the marriage bond, —without the responsibility and publicity of children. The number of childless unions dissolved in our divorce courts is an index of the unhappiness following marriages in which the primary end of marriage is defied. For some the unhappiness may come later in life, and indeed there are few more pitiable objects than the childless woman who is losing her beauty after a fevered life of egotism and self-indulgence. In the common experience of mankind, marriages based on passion are seldom happy. If it is suggested that contraceptive methods be employed merely to space the arrival of children in relation to available income, two objections must be considered. In the first place it is easier to rear children more or less of the same age, because they educate each other in the nursery. Secondly, the attempt to space a family by contraception is often followed by sterility. It is dangerous to go against Nature. Another objection to the teaching of birth prevention has been little recognized, namely, that it is incompatible with the tradition of marriage in Western civilization, based on the mutual rights of husband and wife. The most ardent advocates of birth prevention claim that this is solely a woman's question and that every woman has the right to decide, according to her own caprice, whether or not she will bear a child. She is to be under no obligation in this matter either to the husband who supports her, to the State which safeguards her, or to the God who created her. Moreover, by suitable instruction, she is to be given the privilege of practising contraception without the knowledge or consent of her husband. That is a claim for Feminism which no sane man would admit, or which, if admitted, would destroy the very foundations of our civilization.

"It is claimed that the practice of contraception would improve the race by limiting children in proportion to the unfitness of parents, whereby inferior stocks would be suppressed. That is negative in contrast to positive eugenics, which seeks to find the environment in which the moral, mental, and physical qualities of a race could be improved. Contraception cannot achieve this end, because the great diseases, cancer, tuberculosis, and syphilis are not inherited. No child is born tuberculous. All cases are infected after birth, and infection can be prevented. Syphilis is not inherited, but may be transmitted, and is curable. Insanity is inherited, but the prevention of insanty by contraception would injure the race. A bold statement, but nevertheless true. Dr. Lange traced the healthy collaterals,—brothers, sisters, cousins, uncles, and aunts,—in the latest generation of twenty-eight families in which one, two, three, and even four members had been certified insane. If the grandparents of those twenty-eight families had practised contraception all this lunacy would have been prevented, but the State of Denmark would have lost the healthy collaterals,—including two Cabinet Ministers, an Ambassador, three Bishops, Generals, Admirals, and Judges of the Supreme Court, eight consulting physicians, nine Professors, and twenty-three Doctors of Science or Arts, a large number of members of parliament, city councilors, teachers, business men, and government officials, together with seventy-two individuals who by their intellectual ability had won a measure of distinction in other paths of life. Contraception! If the grandparents of these twenty-eight families, represented in the lunatic asylum, had practised contraception it is impossible to visualize the consequent loss to the world,—a world in which there is more good than evil.

"If high birth rates were the cause of poverty, contraception would be a logical remedy. In point of fact the reverse is true, because poverty is a cause of high birth rates. Elsewhere I have restated the law of Doubleday as follows,—'that under conditions of hardship the birth rate tends to rise, and that in circumstances of ease the birth rate tends to fall.' The same truth underlies the Darwinian conclusion that the rate of reproduction has been regulated in the course of many generations in relation to the chances of death. Nature makes good the leakage from high death rates by a high birth rate. For example between 1800 and 1820 social conditions in England were deplorable. Wheat ranged in price from four to six pounds per quarter, and famine prevailed in many parts of the country. And yet during the first ten years of that period the population of England increased by fourteen per cent., and during the second ten years by seventeen per cent. On the other hand when social conditions are improved the birth rate falls of its own accord. Thus in the Suez Canal Zone between 1901-10 the introduction of antimalarial measures reduced the death rate from thirty to nineteen per thousand. Yet there was no increase of population because the birth rate fell of its own accord, the people being strict Mohammedans to whom contraception is forbidden by the Koran. Elsewhere in this brief essay I have referred to some of the true causes of poverty in the modern world. If these were removed the high birth rates of the poor would fall of their own accord. In relation to pov-

erty birth prevention is now offered in place of social reform. The one- and the two-roomed houses would do very well if contraception were practised by the occupants. Nor would there be any need to raise wages, if the number of children were reduced to the economic level of existing wages.

"When Neo-Malthusians claim that contraception will prevent overpopulation, it is advisable to define what overpopulation means. It is not merely a matter of numbers. A barren rock in the ocean is overpopulated by one starving man, but the United States is not overpopulated by one hundred and six million people. A country would be overpopulated when population is increasing at a faster rate than the unrestricted food supply, whereby population is literally pressing on the soil, and large numbers are overcrowded and underfed, for the reason that there is neither sufficient space for their accommodation nor enough food to go round. Under these conditions I admit that contraception could alleviate the distress, because the miserable inhabitants of such a country would be faced by two alternatives,—either to endure the high death rates of want and starvation that reduced population to the level of the food supply, or to restrict the birth rate, either by self-control or contraception. These arguments are purely academic, because this state of affairs has never yet been proved to exist in any country in the world, and is unlikely to arise in the future because even industrial countries are now able to obtain their food supplies from the greater part of the inhabited globe.

"It is necessary to distinguish between an unrestricted food supply, and a restricted food supply. The food supply coming to any state, community, or family may be so restricted by war, by a corner in food, or by the greed of a profiteer, that the available food is insufficient for the needs of the children born into that country, community, or family. In that case the cause of the shortage is not overpopulation, but bad government or war. So far as I know contraception has never yet been suggested as a remedy for bad government and, as will be proved, it is not a preventive of wars. Moreover, Neo-Malthusians fail to distinguish between overpopulation and overcrowding. Overcrowding might be caused by overpopulation, but where overcrowding does exist more obvious causes are apparent. For example, let us postulate an island of one thousand acres, divided into ten farms of one hundred acres, each supporting a family of ten people. My island is not overcrowded. But if one family eventually obtains the ownership of nine farms, then ninety people may have to live on ten acres. Although ninety people are thus overcrowded, my island is not overpopulated, and they are overcrowded, not by reason of overpopulation, but because of the avarice of their fellows. On the other hand a certain amount of poverty is due to indolence and frailty on the part of those who are poor and consequently overcrowded, but I have yet to learn that contraception is a cure for indolence and frailty.

"As to war, it cannot be denied that, as long as Christianity is more preached than practised, a strong, vigorous, fertile race may wage war for the acquisition of new territory. Against that risk contraception is no insurance, for the simple reason that strong and vigorous nations do not

practise, and never have practised contraception. On the contrary contraception may be regarded as a cause of war, because a nation whose numbers are dwindling offers a temptation to the declaration of war by a more robust and aggressive neighbor. In every fight there is an aggressor, and when two nations are equal in strength, the aggressor will hesitate before entering into an exchange of death, mutilation, and destruction of wealth. In 1850 the populations of France and of Germany were equal,—thirty-five and a half millions each; but in 1913 that of France was thirty-nine and a half millions, that of Germany sixty-seven millions. The smaller population of France was an incentive to the declaration of war by her neighbor, who expected to reach the gates of Paris within a month. Contraception has been widely practised in France for more than half a century and, so far from having conferred any benefit, is now recognized as a national danger against which the French Government in 1921 made laws whereby the advocacy of contraception was made a criminal offense.

"The practice of contraception is incompatible with the progress of civilization. It has never been associated either with the growth of a nation or with the spread of a civilization. There are certain races in the world who practise a method of birth prevention more effective than any hitherto advocated in Europe and America. By a simple surgical operation on every male child at the age of ten, it becomes unnecessary to take any precautions in later life *except* when the birth of a child is desired. This simple, inexpensive, and fool-proof method of birth prevention is practised throughout Western and Central Australia by savages who are the poorest and most degraded of mankind. On the other hand, birth prevention in the past has been associated with the decline of great civilizations. It may be that birth prevention was the cause of their decline, or that birth prevention was one sign of a moral breakdown antecedent to national extinction. 'In our time,' writes Polybius (circa 150 B.C.) 'all Greece was visited by a dearth of children . . . and a failure of productiveness followed . . . by our men's becoming perverted to a passion for show and money and the pleasure of an idle life, and accordingly either not marrying at all, or, if they did marry, refusing to rear the children that were born, or at most one or two out of a great number, for the sake of leaving them well off or bringing them up in extravagant luxury.'

"From the history of dead nations it would appear that race suicide is the mediate but not the ultimate cause of national decay; that it is but one expression of moral weariness pervading a civilization whose force is spent; and that the suicide of a race demands less resolution than the suicide of an individual."

Conception control violates the innate sense of right and decency in the human soul. This argument is thus well expressed by a writer in *Birth Control* of the C. T. S. of England:

"Finally, I would point to the fact that this practice is opposed to the moral feelings. By this I mean that the spontaneous reaction of any unsophisticated person is a feeling of repulsion and disgust. It is true that nowadays an unceasing propaganda and the sponsorship of men of learning and respectability have blunted these feelings and invested the practice

with a cloak of prudence, nay, with a halo of sanctity; but that does not touch the validity of the criterion. Why all this appeal to patriotism, prudence, beautiful motherhood, if it be not designed to combat the instinctive disgust for the whole thing?"

A *confessarius* once related to me that, in the confessional, he had been opposed by the following arguments:

1. The exposition of Onan's act, Genesis, XXXVIII, 8-10, is doubtful. Lagrange places the evil of the act in the injustice done to Tamar by depriving her of a child.

2. Many leading scientists, sociologists, physicians, non-Catholic clergymen deny the unlawfulness of a reasonable conception control.

3. The Catholic Church has rendered no decision.

The spiritual counselor shall often feel his inadequacy to deal with these issues. His sufficiency is of God. The spirit of the world, the wisdom of the world are against him. "The natural man receiveth not the things of the Spirit of God." The natural man will not be persuaded of the true ethics of human mating.

In that loneliness that invades the soul at such moments, I counsel the representative of God's law in his own soul to personify truth and right, and to content himself by a defense that may win the approval of Lady Truth, and Lady Right. His words may not convince the unteachable souls of worldly men. Jesus Christ drew not the Pharisees to his following, and Paul founded no church at Athens. The minister of Christ is responsible for a just presentation of the truth. In all ages of the world men have turned away from God and his prophets.

In answer therefore to the first argument it should be declared that only the modernistic exegesis refuses to see in Onan's act the unnatural crime against the family. In another place we have given our view of this biblical narrative.

In the year 1927, Dr. Katherine Bement Davis, general secretary of the bureau of social hygiene, which is financed by John D. Rockefeller Jr., sent a questionnaire to married women from Clubs and Colleges. Touching conception control: out of 691 college graduates, 520 practice it.

25 out of 691 college graduates desired no children.

171 out of 691 college graduates gave "health" as reason.

156 out of 691 college graduates cited "economic" conditions.

The question of overpopulation is rarely ever the direct motive of conception control. A nearer, more personal end motivates the Onanist. But the theory of overpopulation enters the soul, and destroys the aversion to the sin, and disposes the principal more readily to perpetrate what unbelieving ethnologists consider the only easement. Thus Prof. A. E. Ross of the University of Wisconsin predicts that in one century from now the population of the world will be 60,800,000,000, or 32 times what it is now, provided the birth and death rates maintain the same ratio as at present. The death rate is now 15 per 1000, according to Prof. Ross, and the birth rate is 45 per 1000. In the last 90 years the population of the world has doubled. Prof. Ross estimates that 70 per cent. of the world's population is composed of the colored races.

Whereas God has punished with death Onan, infamous author of conception control, and whereas human birth is presented in God's message as the chief end of the union of man and woman, to allege overpopulation as a justification for conception control is in effect to charge God with incompetent control of the universe. It is an impeachment of the providence of God. A pseudo-science no longer contemplates human society under God, but independent of God, and rebellious against God's clearly revealed law.

According to Dom Maternus Spitz, O. S. B., writing from the latest available data in the London *Catholic Universe,* the Christian population of the world numbers approximately 684,000,000; the non-Christians number 1,132,000,000, making the total population of the world 1,816,000,000.

The exponent of the true ethics of human conception faces a world that continually swings farther away from the plan of God. The spirit of the world is materialistic and hedonistic. The sectaries of that spirit will not deny themselves, and sacrifice temporal pleasures for eternal values. The sophisms and fallacies of atheists, communists, socialists, agnostics, and Jews are readily seized on to justify the foul practice of conception control. Robert Owen, Robert Ingersoll, H. G. Wells, Dr. A. Jacobi are apostles of conception control.

On Dec. 2, 1927, at Syracuse, N. Y., The League of Women Voters in convention assembled by a vote of 53 to 42 went on record as favoring conception control and the repeal of the Penal Code touching it.

At Blackpool, England, The Women's National Liberal Federation in session passed the following resolution:

"Realizing the harm done by promiscuous and uninstructed advice already available on the regulation of families, this federation records its opinion that information should be available to those who ask for it at centers controlled by the ministry of health, where doctors are in possession of the medical history of the mothers and know to whom the information should be given. This would enable the poorest members of the community to obtain information to which the wealthier classes have access."

"There is real danger of the world being overpopulated," said Mrs. Spring Rice, introducing the resolution, "but we want birth control to be associated not with the limitation so much as the improvement of families. The larger the family the larger the proportion of deaths in childbirth. The slavery under which some working women live is appalling."

"Overpopulation is now becoming serious," seconded Lady Acland, "it is important to safeguard the quality of the population.

"There are people who are shocked at the idea that mothers should be able to choose how many children they bring into the world. We can leave that to the gentlemen who look upon children as cannon fodder.

"In a world where there is almost unbridled license for slaughtering children, mothers should have some choice in the number of children they bear."

Miss Ida Samuel, announcing that she was speaking for women under 30, said:

"Women of my age are in favor of birth control and will work hard for any body of women who will bring that policy before the nation. Birth control is the basis of social reform. We want in future to produce the best possible children."

In 1927, in the Birth Control Clinic in Manhattan, 4,500 women were advised on Conception Control.

"We have to face the fact that the practice of contraception has become widespread before there has been time to think out its implications, ethical or otherwise." (Report of English National Council of Public Morals.)

"Birth control came by accident and not because it was needed: it is dysgenic." (Sir William Beveridge)

The normal woman is not exhausted by bearing children. Nature provides for what nature demands. We quote again from the aforesaid C. T. S. publication:

"Perhaps it may be of interest to refer to some research work undertaken in a big Maternity and Child Welfare Department recently.

"Investigation was made into the social, hygienic, and economic conditions under which the poorest of our working class—or, perhaps it would be more correct to say our workless class— was existing in a big city, and for this purpose detailed enquiry was made into the health and social conditions of five hundred very poor families. The enquiry was undertaken by no less than twelve people—all Health Visitors—on *unsettled cases* taken at random from the poorest section of our population.

"Three hundred and fifty of these families were families of over five children, which will be called Class A, while 150 were families of under five children, which will be called Class B. The average number of children in Class A was 8. The average number in Class B was 2.9. Overcrowding in Class A was considerably greater than in Class B, the maximum average number of rooms inhabited by the family being only 3.7 in Class A, and 2.65 in Class B, and the sanitary conditions were decidedly less good. (Only 16 per cent. W. C.'s as against 32 per cent. for Class B.) It was found that the health of the mother was definitely slightly better in Class A than in Class B, while the health of the children was very markedly so. Two further points worthy of notice were: (1) that the maternal health level was decidedly higher than the paternal, and (2) that, even in this, the most improvident and fertile class of the whole community, the class of the casual labourer (nearly all of them out of work), the average interval between the pregnancies (every miscarriage or still-birth being counted as a confinement), was as much as two years and two months in the series of 350 big families, and of two years in the series of 150 small families."

"Perhaps one of the most widespread fallacies among the very numerous non-medical people who interest themselves so actively in the subject of birth control, is the assumption that the bearing of children is essentially pathological. Yet in a series of five hundred very poor families the aver-

age of the maternal health was very definitely higher than the average of the paternal health. Under modern methods of preventive midwifery, and with the widespread increase of ante-natal clinics, it cannot be too vigorously stated and repeated, that marriage and child-bearing are not productive of continuously recurring disease and ill-health to the mother. Where such ill-health occurs, it is nearly always the result of one of two things: Firstly, bad and meddlesome midwifery at the time of confinement, together with absence of good preventive work in the form of ante-natal care of the expectant mother which are productive of much unnecessary ill-health among married women. These evils are, however, preventable, and every effort is being made all over the country under the auspices, and with the active encouragement, of the Ministry of Health, to raise the standard of midwifery and improve the health of our mothers. Secondly, acquired venereal infection. This can be, and should be, treated medically, and—it must be explained—will never be prevented, will, indeed, rather be increased by the advocated methods of birth control which permit free licence to sexual passions. The offspring of a mother who has had efficient anti-syphilitic treatment before the birth of the child should be healthy, and free from congenital syphilis, while gonnorrheal infection in the child can be avoided by appropriate medical measures. It seems essential to point this out as certain non-medical writers on the subject seem to be quite ignorant of these facts.

"Another very important point that seems to be lost sight of by the advocates of birth control, is the fact that *most of the suffering of our working-class women* arises from the unrestrained licence and want of self-control of their husbands, especially after drinking bouts. These cases are not, I think, so numerous as some women social workers would have us believe, but they are very painful and essentially a problem of our lower working-class population. Birth control, by removing every check to licence, simply makes the position of these women very much worse."

In 1926 there was published in England *Ethics of Birth Control, being the Report of a Special Committee appointed by the National Council of Public Morals.* This report was ably reviewed by the Rev. Henry Davis, S. J., to whom we are indebted for much of the following data.

"Observation in the poorer districts of large cities leads one to think that this practice has been confined to the richer classes of the people. The poor have not, as yet, resorted to it in any considerable numbers. The state of eugenist opinion is, therefore, that the poorer classes must be taught the practice, and some go so far as to maintain that the poor must be made to adopt it. Only thus, they say, will the nation cease to be reinforced from the lower strata." (Davis)

Throughout the Report, the Christian outlook is assumed; this means that it is accepted as fundamental that "self-gratification is not the true purpose of life, that life finds its fulfilment in service and sacrifice, that spiritual help can be relied upon by those united in Christian wedlock, that the family is a Divine institution."

"Parenthood is the primary purpose of marriage, and means sharing in the Divine activity of creation. . . . Characters schooled to approxi-

mate to the Divine image are the supreme wealth of the State as they are the glory of the family." The Committee therefore deplores the tendency to look on a few children as sufficient fulfilment of the natural function.

The Report goes on to classify the reasons why control has been practised widely in modern times. The reasons given are three, namely, the educational and domestic, the medical, the economic.

The Report throughout is guided by the false principle, that contraception be not an intrinsic evil, which no circumstances may justify, but a relative evil, which is to be restricted within just bounds. Thus touching the educational reason it finds no cogency in it, since many of the best men and women have been found in large families.

It is thought, too, that the medical view may be unconsciously biassed in favour of control, for advice is *ex hypothesi* likely to be asked for mainly in exceptional cases. "In the vast number of cases," the Report truly says, "there is no need to interfere with nature." In other words, it is for relatively a small minority that any question arises at all of limiting the family.

This is a *suppressio veri:* there is never a right, in the way that they propose, to interfere with nature.

The economic reason is familiar: high cost of living, the difficulty of securing adequate house-room, environment that is unhealthy. In view of slender financial resources, it is not surprising, says the Report, that people have had recourse to control, many of whom have the highest ideals of married life. Apart from the question of methods, such action, the Committee thought, is seen to be in many cases advisable and even necessary.

Since Conception Control may be secured by the lawful method of self-control and continence, the aforesaid conclusion may not be condemned, but it is ambiguous in a matter where clearness is demanded.

The Committee made no mention of a large class who practice Conception Control merely to enjoy physical gratification without the encumbrance of offspring. Such immorality has no redeeming feature. It is narrow, selfish, egoistic.

"In the second part of the Report, the methods of birth control are considered. Self-control—that is, complete abstention during those periods when conception is not desired—is rightly stated by the Committee to be the ideal method. This is, so it is maintained, not so impossible as often it is alleged to be. Its feasibility, the Committee thinks, is gravely underrated. But the widespread acquaintance with artificial contraceptives, the open advocacy of them, the approval of them, in at least extreme cases, by some clergymen and ministers outside the Catholic Church, have so condoned their use, that the self-control largely practised, we believe, twenty and even ten years ago has been forced into ignoble surrender. If married people are told that in very exceptional cases artifices may be used, then they will prove to their own satisfaction that the case is the exceptional one." (Davis)

The Committee justly declares:

"Parents and the Churches have a serious responsibility. The Christian point of view must be insisted upon. In Christian principles there are

reasons available for discipline and control. But unfortunately much of the Christianity of to-day is hardly more than nominal."

Some self-control and abstention must be practised, to reach the highest ideal, but this tenor of life must not be motivated by the educational, or economic reason, and much less by the hedonistic motive.

We here reproduce some conclusions of the Report and Father Davis' convincing refutation of them.

At the outset, the Report makes this astonishing assertion: "As in all other instances of the control of nature by man, the ethical question arises, not in the methods themeslves, but in the motives by which their use or non-use is determined. If married people, in full view of the principles already enunciated, decide that the use of contraceptives is for them justified, we do not condemn them."

A statement like this makes one wonder why the Committee undertook even to consider the *ethical aspect* of birth control. The matter might have been settled in one brief sentence—namely, "If you think you have a good reason, use contraceptives: if not, do not use them." To adopt such a line of reasoning in ethics is really to deny that there is any radical right and wrong in human conduct apart from motive. The direct and deliberate killing of an innocent person becomes first a matter of motive, of which, it is to be observed, the doer alone may be and need be the judge. If in full view of the principles of justice a man decides that such killing is for him justified, how can the Committee condemn him? And yet we do condemn him, and we hang people for such killing, however laudable they allege their motive to have been. If we are going to examine the ethical aspect of birth control, we ought to ask ourselves the question: Is the practice right or wrong, prescinding from motives? If it is found to be wrong, a perversion of nature, we need not stay to consider motives. If it is found to be non-moral, such as walking, singing, and innumerable other actions, an evil motive will vitiate the act as done in the concrete, for it is highly unreasonable and an offence against God to act from evil motive. It is obvious that there are two determinants of the moral act—namely, the object and its accompanying circumstances. Who in the world would consider only my motive in handing a razor to a homicidal maniac? The act in itself, apart from motive, would be normally an outrageous act of folly. We do not deny that a situation could arise in which such an act would be justifiable, but it would be rare, and its justification would be other facts and circumstances.

Dissent from the Committee.—Our quarrel with the Report is precisely because it is stated therein that ethical questions arise, not from methods adopted, but from motives. The true ethical statement is that we must consider methods and motives together. If either is evil, the human act is evil.

In this context, it is very disturbing to clear thinking to find in the evidence of the Lord Bishop of Guildford the statement that "it is very hard to say of any act that it is wrong *per se* apart from examination of motives—*e.g.*, killing, lying, theft in some cases are held (! *sic*—but does his Lordship hold this?) to be justifiable. Adultery alone appears to be a

sin *per se*, and the like may be said of morbid vices." But surely, if theft is held in some cases to be justifiable, in other cases it is not so, and we are therefore driven back on the ethical question: If theft is sometimes unjustifiable, what makes it so? Is it motive or what? His Lordship goes on to say: "We are bound, however, to seek the highest, and in any advice I had to give I should urge that abstinence with its great self-discipline, when it is based on religious conviction, shared by both partners, is the highest course to follow." But really, are we bound to seek the highest? Who in the world feels obliged to seek the highest? What is the highest? If the highest is the exact imitation, according to the circumstances of our life, of the Divine Model, Jesus Christ, then undoubtedly continency and virginity, according to the mind of St. Paul, is in itself the highest, yet it is not of obligation, as he expressly tells us.

Methods and Motives.—To revert to the Report and to its strange teaching on motive. When we enquire whether or not unnatural vice is morally wrong, we do not trouble to ask a man first what his motive is in indulging in the practice. Yet, in the view of the Report, if after weighing the evidence from reason against unnatural vice, a man said that he was not convinced—nay, on the contrary, he thought that his motive justified him in practising such a vice—we should say that perhaps in his conscience he was guiltless in consequence of wrong views or invincible ignorance, but nevertheless we should say that he was quite mistaken, and that the sin—even one sin—ought to be condemned by every rational man, and that no motive could justify such a perversion of natural functions. So, too, if married people come to the conclusion that for them the use of contraceptives is morally justifiable, it has first of all to be determined whether they are right or wrong in their view of the matter, whether or not birth control, like unnatural vice, is under every circumstance wrong. That is really the ethical question to settle. The accident of motive—and still less, of course, of personal conviction—does not settle the matter, any more than, in the view of the Lord Bishop of Guildford, a view in which we concur, the moral aspect of adultery is settled by motive and conviction. Is it true, therefore, to say with the Report: "The ethical question arises not in the methods themselves *(i.e.,* of birth control), but in the motives"? If the Committee spent so much time in trying to discover whether such or such a motive justifies the use of contraceptives, then we really think that the Committee missed the main point; they did not face the ethical issue at all. If it had been investigating the ethical question of betting, it would surely have investigated the alleged wrongfulness of betting, even in the case of a rich man who has money to spare. If it had been found that betting is non-moral in itself, like walking and singing, then it might have pointed out the evils which normally accompany betting, and it might have recommended the entire elimination of legal betting. But to say that the morality of betting is only and always a question of motive is not to state anything at all about the ethics of betting. If the Committee had been asked: Is walking a wrong human act? it would surely have had to say: "Not at all, in itself; it depends on circumstances." If asked: Is adultery a wrong human act? it would surely have

had to say: "Yes, always." If asked: Is the use of contraceptives a wrong act? will it put the matter on the level of walking or of adultery?

The Report continues: "There may be cases, we fully grant, where – especially under medical advice—their use *(i.e.,* the use of contraceptives) is inevitable." But is not this the subservience of the ethical to the medical view? Is it not to accept the plea of some (we do not say of many) doctors that they have to attend to their business, and leave ethics to the philosopher or the theologian?

False Use of "Unnatural".—The Report then takes up the word "unnatural," and confuses the issue by playing on the meaning of the word, disregarding the only pertinent sense of it in a discussion such as the present. Thus: "In any case we do not feel able to condemn them *(i.e.,* contraceptives) on the ground of their being (as it is alleged) 'unnatural,' for this would seem to beg the question at issue. Civilisation itself has been the story of man's control over nature mainly by mechanical means." Now when opponents of birth control maintain that contraceptives are unnatural, they certainly do not mean that contraceptives utilise certain chemical or mechanical forces of nature that produce their physical effect, which, without them, would not have been produced. They do not mean that certain contraceptive devices divert the forces of nature into channels that nature itself, without them, would not follow, much as the dam diverts or arrests a stream or the lightning conductor directs the electric energy to a definite place in the earth. All these effects are simply natural. Man's control of nature by mechanical means is eminently natural, for man utilises the powers of nature in such a way that nature, by its own laws follows the course marked out for it by man. It cannot be maintained in any true sense that the whole of civilisation is unnatural. It is too absurd to say that it is unnatural for man to build walls on the stony mountains to prevent boulders from falling on to houses below. It is just as natural for a boulder to rest against the restraining wall as to crush a house in its fall. It is as natural for the boulder to be kept back by force as to fall by force. In every case it is nature's law that works. Similarly, the effect of contraceptives is natural—that is, strictly in accordance with physical forces—but the employment of them is a human act, and may be highly unnatural—that is, opposed to principles of right moral conduct.

No one condemns birth control as unnatural simply on the ground that contraceptives have been discovered and used. No one ought to speak of the use of railways, bridges, spectacles, telephones, drugs as an unnatural use without defining his terms. Many writers have misused the word, and confuse the thoughtless. On their showing, they would be forced to admit that the use of crutches by a lame man is unnatural. Should they not rather say that the use of crutches by a lame man is the most natural use to which crutches can be put? It is surprising, therefore, that the Committee, and in his evidence, Mr. Harold Cox, together with numerous writers who favor contraceptives, should allow themselves to fall into such a gross confusion of thought as to suppose that contraceptives are to be called—or are ever called—unnatural because they enable those who use them to thwart the natural effect of marital intercourse. To take the

word "unnatural," which is employed by opponents of birth control, and to give it a meaning which they never adopt—viz., the diverting of natural forces to the service of man—and then triumphantly to point out that all civilisation is the story of man's diverting natural forces to his own service, and is therefore an "unnatural" use, is, we venture to say, ridiculous and almost intellectually dishonest. If the case against contraceptives rested on a basis that would implicitly condemn all civilisation, then indeed there would be nothing to say.

True Meaning of "Unnatural".—What, then, is the true meaning of "unnatural" when applied to the use of contraceptives? One might answer the question by asking: What do we mean when we say that a parent is unnatural? What is meant by an unnatural child? What, by unnatural vice? We surely mean that the conduct of such parent, child, and pervert is ethically wrong, that it is against right reason, that it is a violation of the tendencies that are becoming to a rational being, that it is contrary to the dictate of reason, that it so violates natural laws as to be contrary to the good which natural appetites—ruled by reason—are designed to achieve. Such conduct is a true radical subversion of nature, and not a mere diverting of forces and function into unwonted channels. The "unnatural" in the moral order or in the order of human conduct is an act against the law of our being, an act whose result is to stifle the good and the reasonable tendencies in human nature.

We say that a lewd and licentious man acts unnaturally because he seeks pleasure in ways that nature could never intend, for if it did so intend, nature would approve of conduct that is, of its essence, calculated to extinguish its own life. We say that an immoral boy who indulges in solitary vice for his own gratification is acting unnaturally, for he is misusing a function which nature intended for the propagation of the race; his act frustrates the purpose of nature. If nature did not condemn the act, it would be condoning its own extinction. Such is the meaning of the word "unnatural" when used of contraceptives. The boy's motive has nothing to do with the unnaturalness of his act. Here we have no need to consider the motives for rather than the methods of achieving sensual pleasure. The act is an unnatural, irrational, and a morally bad act.

The case is no better in the woman who, for her own or another's pleasure, or for money, or for love even in married life, receives the fecundating element of human life into her body—as nature intends her to do in the married state—but at the threshold, as it were, frustrates the very purpose which nature so evidently has in supplying her with appropriate organs for the reception, development, and growth of those elements that issue in living beings. We say that if the woman so act, she is in no better case, morally, than the immoral boy.

The argument goes further. The exercise of their natural right by a married couple is good and rational. Nature gave them desires, tendencies, and wonderfully adapted organs in order that the race might survive. But if these married people wish to derive only physical pleasure from the marital act or the emotional pleasure of love, and at the same time take precautions that their act shall not have its natural issue—namely, con-

ception—then is it not obvious that this is pure hedonism? And is not hedonism irrational? If it is justified in one case, why not in every case? One asks again, How are such people in better case, morally, than the man of vicious habits or the immoral boy? Their action is unnatural in the true sense of the word—that is to say, in the rational order. We need not trouble about motives; it is the method that matters here.

It has been maintained that the state of marriage changes all this; that frustration of conception would be very wrong in the unmarried, but that it is permissible in the married, because the unmarried have no right at all to exercise such actions, whereas, in the married, all such actions may be an expression of love, and provided that expression is sought between husband and wife, there is no moral obliquity in frustrating the natural consequences of it. But if one is going to act on hedonistic principles, why should the unmarried be debarred from such action? Is it not necessary for married persons to prove that such an expression of love is legitimate? To express love in a wrong way is ethically wrong. The circumstance of marriage justifies, indeed, the expression of love in the marital act, but nature cannot but condemn, on principle and in every case, the frustrated marital act, for nature would else approve of an act that of its essence defeats nature's primary purpose, and so leads to the extinction of all life. It is a little surprising, therefore, that the Report should say: "The argument for hesitation in beginning any such practice (as contraceptive practices) needs to be based on motives and principles rather than on the alleged evil *per se* of the methods in question." We are doing the Committee no injustice in taking this sentence by itself, even though the admission is made that "these cases are abnormal, that no decision to use them (contraceptives) should be made without the fullest consideration of the principles stated, and that marriage relationship has been closely connected with religious customs, mysteries, rites. This indicates," it is submitted, "that the principles controlling it have been deemed to go deep into eternal realities." A little vague, to be sure, and not calculated to help the married individual to make up his or her mind how and why mere marital relations come into contact with religion.

Religious Sanction not Rightly Expressed.—The aspect of the practice of birth control next touched upon in the Report is a very serious and subtle one. If this aspect of moral conduct between man and wife is justified, then the whole case against the essential immorality of contraception appears to fall. We shall have to examine this point carefully.

The Report says: "It is certain that religious sanction has always been forthcoming for the view that intercourse and procreation have been by nature inseparably conjoined. Yet the term 'inseparably' needs modification. For it is beyond doubt that not every act of intercourse is inevitably followed by conception, and further that religious approval has never been withheld from intercourse during the few days of the so-called 'safe period,' when it is indulged with the deliberate hope and intention that no conception will follow. Indeed, this raises a question which is intimately connected with the religious aspect of the matter—namely, the legitimacy or otherwise of disconnecting the physical act characteristic of marriage

from its usual and natural consequences in procreation." The word "disconnecting" in this context is all-important. If it means "disconnecting" in desire that no procreation may take place, husband and wife merely leave themselves passive to the processes of nature, and for this species of disconnecting or dissociation religious sanction is assuredly forthcoming. But if it means "disconnecting" the act from its consequences by positive, physical, and artificial means, then the statement is a begging of the question. It has to be proved, and not merely asserted, that religious sanction, that the Church's teaching—or any Church's teaching—is forthcoming for artificial contraception. We know of no Church that teaches that doctrine. We know that the Catholic Church condemns it; we know also that the Anglican prelates in quite recent representative meetings have condemned it. The religious sanction has been stated in the Report in a highly confused way; it should be stated as follows: "Religious sanction has always been forthcoming for the view that the primary purpose of intercourse in marriage is procreation, and that therefore, when procreation is possible, though not certain, married people may, indeed, desire nature to grant them the exception, as it were, but they may not positively, by any act of theirs, frustrate nature's primary purpose." It will readily be seen that the word "inseparably" needs no modification when the religious sanction is correctly stated.

The ethical aspect comes to this—namely, that as nature intends procreation to issue from intercourse and from no other action, for this is nature's only way of passing on life, married persons act irrationally if they indulge in intercourse in such a way as positively and effectually to act contrary to nature. Neither ethical sanction nor religious sanction has any bearing on what nature itself does or does not achieve. If during the "safe period" nature fails to achieve conception, neither ethical nor religious sanction condemns married people who have intercourse with the hope that nature may fail, as it is incorrectly stated; nature never fails to act in accordance with its laws. Married persons cannot logically be said to have the desire that nature may fail; what they do desire and what they are justified in desiring is that nature may follow its laws of infertility. Such a desire can effect nothing; the act of intercourse during the 'safe period' is not contrary to nature in any way.

A Wrong Analogy.—But notwithstanding this, or perhaps in consequence of the religious and ethical sanction of intercourse during the "safe period"—an action which has been interpreted by birth controllers as tantamount to positive artificial prevention—the disconnection between the act and its consequences—namely, procreation—has been defended as morally justifiable on the following grounds, which now must be examined. The grounds are given in the words of the Report.

1. Where there is no possibility of children—as, for example, in cases of age or infirmity—the act is so disconnected, and in such circumstances no one questions its propriety or even its necessity as essential to the married state.

CRITICISM.—In the case of age, the dissociation is effected by nature. The parties themselves do not disconnect the act and its natural issue,

because that is already done for them. But to maintain that because nature cannot give issue to some intercourse, man and wife may, therefore, if they wish, prevent issue to any particular intercourse, and thus disconnect the act and its natural consequence, is an extraordinary example of confused thinking.

Where infirmity renders issue impossible, we cannot see what bearing this fact has on the moral problem other than that stated above. If we suppose that at the age of thirty years the wife suffers from some infirmity that makes conception practically impossible, the act and its issue being thus disconnected in point of fact, we fail to see that at the age of twenty-five years, when, let us suppose, conception was possible, the wife may disconnect act and consequence.

2. A second plea of justification for disconnecting the act and procreation is that "the act may rightly be regarded as creating, expressing, and cementing the marital relation apart from its consequences in the procreation of children. That this is both reasonable and reverent is clear from the cases quoted above, in which that is its sole function."

CRITICISM.—The marital act, in which the parties may not even think of procreation at all, has normally, and is intended to have, an effect second in point of time. It is untrue to say that because the first function takes place before the second, therefore the mere order of time proves that procreation may be deliberately disconnected by artificial means from intercourse. Nature, indeed, intended man and woman to establish mutual marital relations that the race might live, not that man and woman might have intercourse. Since that is nature's first intention, it is obvious that procreation is vastly more fundamental in nature's purposes *(i.e.,* the Divine scheme) than the conjugal act or love expression, and an act that frustrates what is more fundamental in nature and more essential to human life is irrational and immoral.

3. The Report continues: "Some would speak of the act as in this sense (viz., the sense of creating, expressing, and cementing the marital relations apart from its issue) sacramental, the outward and tangible sign of the love which it at once consummates and typifies."

CRITICISM.—The conjugal act may be regarded as sacramental in a very broad sense, but such a plea carries us no way towards proving that the act and procreation may be artificially disconnected. No amount of sacramental or mystical connotation will get rid of the plain fact that the conjugal act has a definite primary purpose.

4. "Further, it is obvious that this is one of its main functions *(i.e.,* to consummate and typify love) even where conception is possible and desired. If so, it is difficult to condemn those who, when the grave considerations already mentioned have been faced—that is, where the paramount duty of adequate (! *sic*) parenthood has been recognised and met —regard this particular function as one which may be legitimately isolated and emphasised."

CRITICISM.—Truly, a very important function of the physical act is the expression of love, a function that may be legitimately emphasised. It may even be isolated in the sense that the expression of love may be the

only conscious motive of the act. But to admit so much is not to prove that the physical act may be exercised as an expression of love, and at the same time frustrated, deliberately, of its possible effect—namely, procreation. If sound ethics and all true religion permit the act—as they do—as an expression of love, neither ethics nor religion could allow love so to be exercised as to defeat nature's primary purpose, and to favour the possibility of the extinction of all life at its source, seeing that the love of married people is so expressed—that is, in intercourse—in order that they may be attracted to do nature's behest—namely, to multiply life indefinitely—a behest that, without conjugal love, would not be carried out at all. It is certain that procreation is much more the intention of nature, when she endows man and woman with organs that subserve that intention, than the mere expression of love.

The plea put forward, in other words, comes to this—namely, that even the intercourse that is so used as to frustrate nature's purpose may be a legitimate expression of love. But when the act is an expression of love and its possible and normal effect is being consciously frustrated, is it not perfectly obvious that husband and wife wish to frustrate the effect? How is it possible to make all necessary preparations and to take no small trouble for frustrating the possible consequences of their act without very consciously realising that the disconnecting of act and issue is a condition precedent of their love expression at all costs?

Marriage emancipates a man not from self-control and sexual temperance. To all men Paul gives counsel to possess their body "in sanctification and honor, not in the passion of lust." (I. Thess. 4.)

This counsel represses not virility and sexual ardor in the man, and its reciprocal in the woman. Conjugal happiness commonly demands strong sexual affinities, and vigorous reciprocal exercise; but this noble sex power should be motivated by proper motives, and controlled by temperance. Its vigor and its happiness are exhausted by intemperance.

It is stated in the Report that there are numerous cases in which control of conception, considered in itself and apart from the question of the methods employed, is medically necessary and economically advisable, but in every such case all the circumstances should be weighed in the light of the best scientific and ethical counsel.

Father Davis' answer to this false principle is:

"As we are dealing with the ethical standpoint throughout, the only question that need be asked is: Where conception would be physically dangerous or economically inadvisable, will it be permitted to married people in these circumstances to employ artificial preventives of conception? There is, of course, only one answer to that question—namely, that such action is never permitted. As rational beings we may not subject ethics to hygiene or economics."

It is stated that the weightiest argument for birth control is found in the economic circumstances (wages, grossly inadequate housing, and the like) of many persons. While in many instances birth control by contraceptives may be *the lesser of two evils* (italics ours), the ultimate remedy lies in the amelioration of those conditions.

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Father Davis answers:

"Birth control by contraceptives is not the lesser of two evils in the sense that the economic pressure on subsistence is an evil in the same category as birth control. One is a moral evil, the other a physical misfortune. It is contrary to rational nature and the law of God ever to choose to do moral evil rather than to endure physical misfortune."

Rightly therefore Father Davis concludes:

"No Catholic can recognise—as the Report does—that 'there are certain cases, especially when husband and wife are not at one in the matter, when the use of contraceptive methods seems the only way of avoiding great and entirely undeserved suffering.' "

Father Davis adds this very wise and practical decision:

"Every Catholic can recognise, with the Committee, that there are many who, especially in the economic conditions of the times, seem bound to choose between the use of such methods (viz., contraceptive methods), the curtailment of their married intimacy, and an undesirably large family. Of the choices proposed no Catholic could adopt the first; many are capable of adopting the second, but where they cannot do so, they must trust to Divine Providence to take care of the children, however numerous they may be, who are the consequences of the legitimate use of marriage. Even though the family is already large, both husband and wife retain their rights to intercourse, when they have reasonable grounds for thinking that it is necessary either for the expression of their love or for the allaying of concupiscence."

In the Report there is a Note of Reservation signed by four members:

"The use of contraceptives is a frustration of God's design in nature, and, as such, is unjustifiable. We consider that the most baneful (evil) resulting from even so carefully guarded a recognition of conception control as is contained in this Report will be the inevitable encouragement of immorality among unmarried persons. . . . We do not see how any adequate answer can be given to those who desire a like safeguard in unauthorised connections, or to those who practise the most degrading forms of sensual indulgence."

This minority note is a forcible declaration of the Catholic position.

Among those who testified before the Committee is Lord Dawson, one of the most ardent advocates of Conception Control in England.

1. Lord Dawson declares that abstention from conjugal intercourse in marriage be impracticable and harmful.

This is proven false by the ablest medical authority and by common experience.

It is admitted that such continency is difficult, and that it will not be practised by the average man, but it is possible. Moreover it is not the ideal tenor of married life. During pregnancy a man is continent; during menstruation a decent man is continent; during about two months after childbirth the man is continent; during severe illness of the wife the man is continent; and in like manner through extraordinary conditions a man may be called upon to limit coitus to the immune period.

2. Lord Dawson condemns this mode of conjugal intercourse.

"It is," he says, "the same in principle and aim as other contraceptive devices, and it requires the gift of sophistry to be able to justify one and condemn the other."

Father Davis answers:

"But this is not so; in contraceptive intercourse—if adjustments are correctly made—there is no possible chance of conception; in infertile intercourse during the 'safe period' there is a chance of conception, and the married pair are willing to take the risk—though usually it is said to be a slight one—rather than abuse their functions. The principle, too, is completely different. In the one case the natural course is followed, in the other an unnatural course is adopted. The aim, it must be admitted, is the same in both cases—namely, failure of conception—but it makes all the difference in moral conduct how one's aim is achieved—namely, by means that are indifferent or by means that are unnatural and sinful.

"Again, the witness says that 'infertile intercourse (*i.e.*, during the "safe period") dissociates sexual union from the intention of procreation. It enables sex love to be an end in itself.' But the witness should state that contraceptive intercourse, as such, has no other object than this—namely, to make sex love an end in itself, and, indeed, in many cases to gratify desire. Intercourse during the 'safe period' certainly cannot be said to have no other purpose than infertility, and its chief and main object is certainly not infertility.

"Fourthly, this intercourse (during the 'safe period') 'results too much from a calculated desire for relief rather than from a natural and spontaneous mutual attraction, and the finer emotional accompaniments are lacking in its attainment.' We are certainly of opinion that the only calculation about the 'safe period' is one that regards time, whereas in contraceptive intercourse there is an extraordinary amount of fine calculation in leaving nothing to chance, and in adjusting instruments with such nicety that nature is positively frustrated. The emotional accompaniment of the contraceptive act is the realisation of lust much more than of love.

"Fiftly, 'sexual desire is frequently absent during the infertile days, and is it fair, is it natural, is it consistent with the most delicate ethical standard to encourage sexual union exclusively at times when the spontaneous love impulse is minimal?' Really the witness should distinguish between sexual desire and love. It is sexual desire on the part of the wife that is usually absent during the infertile days, but if love is present—as we may suppose—the act is a fair, a natural, and an ethical expression of love. If the wife is willing, she need not wait upon desire. Indeed, would not the witness admit an obligation in many cases even when desire is absent? Would he not admit, with many writers whose business it is to study these facts, that many children are the issue of acts when there was complete frigidity on the part of the wife, and will he condemn these acts of intercourse as unethical? Does not a doctor ask sick people to eat food even without appetite? No injustice or unfairness is done to the wife, if she is willing."

Lady Barrett testified before the Committee. We regret that she does not absolutely condemn contraceptive divices. But she declares that

many needlessly practice Conception Control. "Scarcely a week goes by," the witness stated, "without my seeing patients who earnestly wish they had never used any means to prevent children which they really greatly desire to have." Speaking from considerable experience, she said that "large numbers of young couples have the question (of contraception) raised in their minds when there is no reason why they should have considered the question. . . . I have never yet known a healthy young couple who have not gone away deciding that at the beginning of married life, at all events, it (i. e. childbearing) was not the thing for them. . . . I am more and more impressed by the fact that one of the results of the propaganda about birth control is that numbers of these people want children later on and cannot have them."

One of the advocates of Conception Control who testified is Mr. Harold Cox. Among his sophisms we shall notice but one and its refutation by Father Davis:

" 'God has created in man,' the witness says, 'two separate instincts, the desire for pleasure and the desire for children. God has made these two instincts distinguishable and distinct. Why, then, is it a sin against God to take measures to secure this distinction?' The first and most obvious reason is that man is endowed with reason, and has to act rationally even in taking his pleasures. If he do not, he is acting against the law of his own nature. God has annexed pleasure to the act of procreation, but he primarily wishes—as common sense proves—the multiplication of life by the act. Positively to thwart the production of life, and to derive physical pleasure in the very act of doing so, is as great a moral enormity as one can well imagine. To do so is both to act against God's primary purpose and to make pleasure an end in itself. Each aspect of the act is irrational. The word 'positively' is used with reason in order to meet the subterfuge that the act of intercourse being permissible during the 'safe period,' as it is called, it is therefore allowable to seek the pleasure without the consequences of procreation. But though husband and wife seek pleasure during this 'safe period,' they do not seek it in a way to thwart nature. They still leave the primary purposes of intercourse unaffected, if by chance there should be issue."

The practice of the "immune period" is not a counsel of despair, but it is a last resort. I should never counsel it save in the gravest cases.

We close this review with the sublime words of the Lord Bishop of Guildford. He states the Catholic position:

"The statement of this witness embodied—with a few exceptions—the whole Catholic view, and what is here extracted from the statement represents the Christian ethical view on the subject.

"1. To detach intercourse from its natural sequel and prevent conception by mechanical contrivances appears to be contrary both to the spirit of the Christian faith and to man's true welfare.

"2. Conception control intensifies the spirit of self-indulgence and materialism.

"3. Such control fosters a spirit of calculating sensuality, for the deliberate isolation of one element in marriage fixes attention on physical

gratification as an end in itself, and the whole basis of marriage is materialised.

"4. It may produce the destruction of self-control. . . . It is of little use for married people to preach continence to the unmarried until they have set their own house in order.

"5. The true remedy for the evil of excessive child-bearing is to teach men greater reverence for women.

"6. The Church must discountenance the practice of birth control.

"7. In the event of young married people not being able for some reason or other to support children, what would you advise them to do? Abstinence is the only course I could recommend.

"It was stated above that the so-called evil of excessive child-bearing is greatly exaggerated. In the Catholic view, children are welcomed as the future children of heaven. If men and women lead the rational, temperate Christian life, if God sends another mouth to fill, he will find means to fill it. If birth controllers walk observantly through the mean streets of Catholic cities, they ought to bless the dwellers therein who give the country such beautiful and wonderful children. Were their eyes able to see, they would witness Divine and parental love shed around the children as a halo. If they studied these 'poor defective creatures' in very squalid places, they would understand where to find the very flower of chastity and the flame of self-sacrifice, without which the materialist would be a moral beggar in this world. The birth controller, we feel sure, is adopting a policy that will not merely reduce the population to an alarming extent, but will sap the very fertility of those people who adopt their methods. It must then become a matter of rapidly decreasing population ending in the decay of the very springs of life."

"Artificial birth control is ethically wrong for the same reason that any other type of sex aberration is ethically wrong, not merely because, to use the common term, it is 'unnatural,' but because it deeply harms humanity's higher welfare.

"Three elements blend together in domestic life: passion, love, and parenthood. Of passion or the grosser physical element little need be said. Love and parenthood call for a few words of analysis. Love includes many things, such as, mutual attraction and sympathy between sexes, tender affection, the desire for companionship, and, in its higher forms, constancy, chivalry, mutual well-wishing, self-devotion and self-sacrifice. The parental impulses manifest themselves primarily in the desire for offspring and more especially in our modern culture in self-devoted and self-sacrificing love, care, and protection of offspring.

"Passion, love, and the parental impulses are often confused one with the other. But in reality they are three very distinct things, and are of very different moral value. Passion and love's desire for companionship and exclusive possession are primarily self-seeking, self-centered, self-regarding, egoistic. The parental impulses and love's constancy and devotion to the one loved are on the contrary primarily other-seeking, other-centered, other-regarding, altruistic.

"The interplay of these several factors in marriage and home life is part of a wondrous and kindly divine strategy by which the selfish sex hunger and the self-regarding trend in love itself are made use of and built upon for the well-being and very being of the race, for the education and rearing of the child, for the training of parents themselves in unselfishness. The motives and forces that impel men and women to marry and found homes are more commonly passion or love's desire for companionship and possession, that is, the selfish or self-regarding factors. But marriage itself and home-making, child-bearing and child-rearing by their very nature fulfil unselfish tasks and train mates in the practice of unselfishness. Through mariage love of self is as it were transformed by a divine alchemy into love of neighbor, egoistic forces are turned into altruistic channels. The cardinal element in any higher concept of human welfare is the birth and growth of unselfishness in humanity, and marriage home-making and child-rearing are for the great mass of human beings the great school, the great project for training humanity in unselfishness.

"Let us look for a moment at the reverse of the picture. What marriage builds up, unchastity tears down. The deadliest enemy of the home and of all that the home does for human welfare is, when all is said and done, unchastity.

"All forms of unchastity have this in common, that they isolate sex pleasure, the selfish side of the whole complex. They satisfy selfish cravings only, and in so far as they go stamp in egoism, self-centeredness, selfishness, all, in fact, that is opposed to unselfish love of neighbor and to human welfare. They divide passion from the higher elements in love and parenthood. They tend of their nature to deflect the streams of character from unselfish into selfish channels. They strip passion of its normal controls and counterchecks and leave it shorn and naked in all its self-centered grossness and animality. They reap the pleasures of passion while selfishly evading the sacrifices and responsibilities of love and parenthood. They are a betrayal of the racial trusteeship that sex is. They frustrate and set at naught a fundamental and perhaps the fundamental project for our higher moral training, for our development and growth in unselfish love of others.

"All forms of unchastity do hurt to human welfare, to him who indulges, to those who are the victims, or to both. Unchastity,—be it incontinence and liberties among the unmarried, solitary sin, unchastity of thought, imagination, word, or desire,—is the great corrosive. And the artificial limitation of offspring is absolutely of a stripe with other forms of unchastity. If they do harm, it does harm. If they are wrong ethically because destructive of humanity's higher welfare, it likewise is wrong ethically because destructive of humanity's higher welfare. By the same measure must both be measured. By the same ethical standards must both be impartially judged. To condemn one and admit the other is to fall into gross inconsistency or to abandon all higher standards of sex ethics.

"We are sometimes asked, and in good faith, if the Catholic Church will ever, in view of great world changes in population or in view of other

possible future conditions, modify and qualify her convictions in the matter of artificial birth control, if she will ever retreat from her actual adamantine stand. Let us have no illusions or misgivings. She will stick to her guns, whatever her losses may be. She will maintain her stand, though the heavens fall. Retreat would be not only self-stultification. It would be suicide. It would be treachery to her commission as the friend of humanity. If we may read the signs of the times, she may be throwing her fortunes into a lost cause, she may be fighting for it almost single-handed so far as our western industrial civilization is concerned, but it will not be the first time that in her concern for the deepest and most sacred rights and interests of humanity she has with open-eyed and unflinching courage freely chosen to save her life by losing it. In taking her stand against the deadly taint of artificial limitation of family, she is taking her stand for the whole higher law of decency and purity. To change her stand would in the long run drive her into hopeless ethical inconsistencies or else force her to abandon every high standard and lofty ideal in the great realm of sex." (The Rev. John M. Cooper, D. D.)

Man's powers, and tendencies are by the creative design directed to certain natural ends. With the appetite there goes a faculty for the pursuit of the object of the appetite, and often some corresponding bodily organ. Appetite, faculty, organ, end (or object) are obviously related to one another (to suggest otherwise would be to cast a slur on the divine wisdom), and each may serve as an index to the others. Man has an appetite for communicating the contents of his mind, and the faculty of speech; he has an appetite for food, and the faculty of eating and digestion; the appetite for the reproduction of his kind and the sexual faculty. Our first criterion then is this: the act of a faculty is naturally good when it pursues the natural object of the corresponding appetite; it is always a bad act so to use a faculty as to oppose the realization of the natural end of that faculty. See what the natural tendency is, and what is the ultimate object of that tendency; consider the faculty at man's disposal for the prosecution of the tendency, for the attainment of the end; and then you may determine that if a man uses the faculty and simultaneously sets out to frustrate and defeat the end, he is doing wrong, sinning against the Law of Nature. For the *unnatural* use of a faculty two conditions are necessary: the faculty must be used, and it must be used so as to frustrate its proper end. Now the proper end of the sexual faculty is procreation. To exercise that faculty while preventing conception is unnatural, and so unlawful. This is so fundamental that the Church has nothing to do with it except to promulgate it. She did not make the law; she cannot abrogate the law or dispense from the law. In the same way, lying is wrong, because it is the using of the faculty of speech while defeating the proper end of speech.

BIRTH

Physiologic changes due to pregnancy.—During pregnancy menstruation generally ceases. The dilatability of the uterus greatly increases. Contractility also increases. Painless involuntary contractions of the uterus are perceptible in the fifth week of gestation. They last from thirty seconds to a few minutes at regular intervals, and continue until they merge into the regular contractions of the first stage of parturition.

The round ligaments and uterosacral ligaments are part of the uterine muscle: they hypertrophy and contract with it. These ligaments moor the uterus to the pelvis in labor.

The ovaries are enlarged and tender; in rare cases ovulation takes place.

The vagina increases in capacity, especially at its upper portion. It becomes more distensible: the vulva enlarges, softens, and becomes dark.

The enlarging uterus presses on the bladder and causes frequent passage of urine: the ureters are enlarged.

The size of the pelvic cavity increases so that some women with contracted pelves may have easy deliveries. The actual enlargement is slight, but the greater movability of the pelvic joints facilitates the delivery.

In most women with the distention of the abdomen, there appear the *striae gravidarum*. These are white or violet broad irregular lines extending from a little above the navel to the pubes. They are sometimes found arranged radially around the nipples. They are not a sure indication of pregnancy: anything that distends the skin may cause them.

In pregnancy the hard tense character of the virgin breasts is lost: the breasts soften, spread out, and sag.

The nipple and areola become more deeply pigmented.

The blood undergoes changes to feed the fetus: the quantity of blood is augmented. The blood pressure rises from the normal (110 to 120) to 140 or even 145. It is highest during labor pains.

"Morning sickness" is common in pregnancy. It is a nausea and vomiting on arising or after breakfast. Usually it does not persist through the day. Its earliest appearance is in the second week; it is more usual in the fifth week. It often ceases after the twelfth week, but may go to term. Its cause is unknown: it attacks primiparae more than multiparae. A fickle, voracious appetite often attends on pregnancy: the pregnant woman often longs for strange, unnatural foods.

It is estimated that a pregnant woman gains one-thirteenth of her weight during pregnancy.

Most women enjoy better health during pregnancy. Nature is kind.

In pregnancy the quantity of urine is usually increased about one-fourth: frequent micturition is the rule.

Pigment is deposited in the nipples and their areola, in the vulva, the linea alba, the navel, and the face. The linea alba becomes quite dark: the face often has the "mask of pregnancy".

Pregnant women may be moody, hyper-excitable, sometimes melancholic: psychoses are not uncommon.

Fainting spells during pregnancy, if not due to organic heart disease, may be disregarded.

"It is impossible to determine the time of conception." (De Lee) A prudent estimate is all that is offered us. The menses are unreliable as a determinant. A woman may menstruate during the first months of pregnancy. Moreover, it is not certain to which menstruation the impregnated ovum should be referred.

Various factors influence the length of gestation. The age, health, habits, and temperament of the gravida influence the length of her gestation. The prudent accoucheur groups the probable data—date of last fruitful coitus, cessation of menstruation, condition of gravida—and proceeds upon the datum that the average period of human gestation is from 270 to 300 days. The period of 280 days—ten lunar months—is the interval in the majority of cases.

Healthful, not over-strenuous exercise promotes a timely, normal delivery.

The process of nature by which the product of conception is expelled from the uterus through the vagina into the world is called *labor, delivery, parturition, travail, childbirth, confinement, accouchement.* If the labor occurs after viability but before term it is called premature. *Abortion* is the interruption of pregnancy before viability: it may be operated by nature or by man. A premature interruption of pregnancy, at any time, is popularly called a *miscarriage.*

Difficult labor is called *dystocia.*

"DIAGNOSIS OF PREGNANCY.—The diagnosis of pregnancy usually is a comparatively easy matter, but in a few cases it is, in the early weeks, one of the most difficult diagnoses to make; therefore in some cases the patient is frankly told the difficulty and asked to return for further examination in a month's time. The first sign that makes a woman suspect that she may have become pregnant is the non-appearance of her menstruation. In a woman of the child-bearing age who previously has been regular in her monthly periods, this cessation of the menstruation is a most important and suggestive sign. Coincident with this stopping of the menstruation, the breasts become enlarged and firm, tender, with prickling sensations, or as many women describe it, 'pins and needles sticking into them.' In those women who have these sensations at a menstrual period this symptom, of course, carries not so much weight as in those women who have never before experienced it.

"Shortly after a menstruation has been skipped, morning nausea, a feeling of distress or active vomiting, may occur. It occurs so frequently that women have come to look upon it as one of the signs of pregnancy.

It is true, however, that many women do not have this nausea, and they do not have to have it in order to be pregnant, as so many women think they must. A certain, tho small, proportion of cases have no nausea in the morning and feel unusually well, but do have a marked nausea in the late afternoon and early evening.

"Usually within the first four or five weeks the woman notices that she passes her water more frequently and often has to get up in the night to void. These four signs, the non-appearance of menstruation, the changes in the breast, the morning nausea, the changes in the passing of the urine, are regarded as the presumptive signs of pregnancy. One or all of these signs may be present the first time the patient presents herself to her doctor for a diagnosis of pregnancy. Usually the patient herself has made the diagnosis, but the definite diagnosis of pregnancy can be made only by a vaginal examination.

"The importance of this first vaginal examination is underestimated by almost all patients. Every woman who suspects that she has become pregnant should, as soon as she has skipped her first period, go to a physician and have him make a pelvic examination in order to establish definitely, if possible, that she is pregnant. This examination not only establishes that she is or is not pregnant in most cases, but it determines whether the pelvic organs are in normal condition. The uterus, the organ in which pregnancy develops, is a movable organ, and in many women it takes a position backwards in the pelvis which, if not rectified early in pregnancy, may cause serious complications in the first few months. It is by this examination that many early miscarriages may be avoided; abnormal conditions in the pelvis are discovered, and treatment, if necessary, can at once be carried out. Few women who think themselves pregnant present themselves to their physician or to the clinic early enough. They assume that their nausea can not be helped; they assume that nothing need be done for at least the first four or five months of their pregnancy. This is a wrong attitude to take, for careful pelvic examinations will do much to rule out many of the complications that come in pregnancy, and will lower the number of early miscarriages which we know are of frequent occurrence. Early supervision will tend to keep patients in better physical condition. The diagnosis of pregnancy in this early stage is not absolute, ever; but the probability is so great that it is fair to tell a patient that she is pregnant and then proceed to tell her the various points that she should know in regard to the hygiene of pregnancy.

"The positive signs of pregnancy, feeling the baby move and hearing the heart beat, can not always be found until the fifth month, and sometimes it is even later before these signs are absolutely certain.

"DURATION OF PREGNANCY.—The duration of pregnancy is ten menstrual periods of twenty-eight days each. That is the probable duration of pregnancy, but if we know the date of conception there is less uncertainty as to the exact date of delivery. The average length of pregnancy, where the beginning can be dated from a single intercourse, varies from 273 to 275 days. The most satisfactory way to reckon the approximate date of delivery is to take the first day of the last menstrual period, count

back on the calendar three months, and add to this date seven to ten days. The date obtained in this way gives only the approximate date that delivery may be expected. At no time should the patient be given to understand that delivery will take place on that date; for altho it sometimes does happen that labor starts on the day that is reckoned, many more times the estimated date is wrong, and the patient may be delivered a week or so early or late. The point to be remembered is that the date chosen is only approximate, that everything should be ready for delivery at least three weeks before that date, but under no circumstances should the patient be alarmed if she goes over a few days. Patients must be made to realize that pregnancy is reckoned as beginning close to the last menstrual period. It is perfectly possible, however, that pregnancy did not begin until just before the next menstruation, and that menstruation was either stopped entirely or materially altered in its characteristics; that is, it was either a day or so short, or if a patient was in the habit of flowing profusely it was a much less profuse menstruation than usual. If a patient can definitely say that there was no opportunity for conception to have occurred until a certain date, then the beginning of pregnancy is reckoned from that known date of intercourse. In all cases where, because of various circumstances, it is known that the pregnancy can be reckoned from one date, the patient should frankly tell her physician what that date is, and then there will be no annoying expectancy during the last weeks of pregnancy.

"The fact that patients often become pregnant two to three weeks after the last menstruation explains in the great majority of cases the 'overtime' or 'late cases.' Many unnecessary operations are done and much mental stress is caused by forgetting this simple but not too well-known fact. Undoubtedly there are a few well-authenticated cases of a pregnancy going over the allotted number of days—the so-called 'post-mature infants.' In these cases the greatest importance is to be placed on the careful supervision of the patient at the very end of pregnancy to determine whether or not the child that is in the uterus is becoming too large. When such cases occur, careful supervision and good judgment will determine whether any operative procedure is necessary, but without careful supervision serious results occur. These cases are on the whole rare, and most of them are explained, as I have suggested, by the fact that the patient became pregnant shortly before the expected date of her next period, rather than shortly after the last period which occurred.

"In contrast to the post-mature child is the premature child, which means that the fetus is expelled from the uterus before its allotted 280 days. The earlier the baby is expelled from the uterus before the 280 days, the less is the chance of that baby surviving. The old saying that an eight-months baby will die while a seven-months baby will live is an entire fallacy, and is based upon the fact that an eight-months baby in many cases looks much like a full term child, and the necessary care, oversight, and careful nursing are not given the eight-months baby, while everybody appreciates how slender a hold on life the seven-months baby has, and therefore treats it with all possible care, surrounding it with every help

to support life until it can itself do so readily, and its premature days are past.

"DETERMINATION OF SEX.—Many mothers, and not a few fathers, are anxious for the physician to try to tell them the sex of the child before it is born, and many ask if there is some way whereby the sex of the child can be settled before a pregnancy is begun. In all probability the sex of the fetus is determined the moment impregnation takes place. How that can be in any way determined beforehand is absolutely unknown. Many theories have been expounded, but up to the present time all have been exploded. The determination of the sex before the child is born is based purely on the rate of the fetal heart as counted by listening to it through the mother's abdomen. At best it is only a guess, and the guess is based on the fact that in a large series of cases, if the fetal heart is slow, about 120 beats to the minute, the majority of these babies will be boys; while if the fetal heart is around 140 beats to the minute, the majority of these babies will be girls.

"Do not believe what your talkative friends tell you, that a boy is carried thus and a girl thus, for it is all idle gossip. And do not believe physicians who tell you positively of the sex. A story is told of a physician in regard to this question. He always finds out the sex wanted and then writes down in his book of cases the opposite sex. If the wished-for sex is obtained, well and good—he is a prophet; if not, he turns to his book and says, 'No, it is written here the opposite.' Again he is a prophet. But do not believe these stories. There is no way of predetermining the sex of a child.

"HYGIENE OF PREGNANCY.—In the past few years great improvement has been made in the care of the pregnant woman. The good results of this care have been demonstrated in thousands upon thousands of cases; and it is well established that no woman in the country should go through pregnancy without careful medical supervision throughout its entire duration.

"*Diet.*—The chief point for a pregnant patient to remember is that she must have a generous mixed diet, and by a mixed diet we mean that her diet should contain the essential elements that go to make up a well-balanced ration. She should have proteids, fats, carbohydrates, a liberal amount of water, and a satisfactory amount of minerals. In the early weeks of her pregnancy, when nausea is present, she will find that marked relief will be given if she eats six small meals a day rather than the accustomed three. The old saying that a pregnant woman must eat for two has long ago been exploded. We are all apt to eat much more than is necessary in order to keep the human system in good physical condition, and if the pregnant patient adds greatly to her diet, she puts on an unnecessary amount of weight and imposes upon her organs, especially her kidneys, an abnormal burden.

"The pregnant patient ought not to eat any one food that she knows will upset her digestion, but she must not listen to the tales of friends, relatives, and neighbors that she must eat this or must not eat that kind of food. The proteid food puts the greatest strain on the kidneys, and, as

we shall see later, in the latter part of pregnancy a lowered amount of proteid diet is advisable in many cases. That is the reason why, in the latter half of pregnancy, patients are advised to have red meat only once a day and not to eat meat, fish, and eggs every day throughout their pregnancy.

"The fats and carbohydrates tend to make the patient very fat, and if this type of food is eaten to excess, marked indigestion at times may be caused and sugar may appear in the urine. It is for this reason that the patient is advised against a markedly increased diet. Fruits, vegetables, the leafy vegetables, add to the water intake and the mineral substances that are needed during a pregnancy. Milk also adds to the mineral matter needed. Salads with dressings can be eaten with impunity, provided the digestion is not upset. Every pregnant woman should drink at least eight glasses of water or liquids in the twenty-four hours. Only one cup of coffee and one cup of tea, if any, should be drunk in a day. All forms of alcohol should be omitted.

"*Exercise.*—A proper amount of exercise is essential. The safest form of exercise is, without a doubt, walking. How many miles or how long she should walk each day is entirely a problem that she must settle with the help of her physician. Some patients walk two, three, or four miles a day with obvious improvement in their general condition, while a half-mile walk is too much for others. A suggestion for patients is that after a walk, if they come back and lie down for half to three-quarters of an hour and then get up feeling refreshed, they have not walked too much, and a few days later they can walk a little farther; but if they come back and after the rest get up feeling fatigued, they have walked too far. The more strenuous forms of athletic exercise, such as tennis, golf, horseback riding, or swimming, can be indulged in only with the greatest care, and under certain circumstances (see '*Miscarriage*', under 'COMPLICATIONS OF PREGNANCY', on a following page) must be given up entirely.

"Many patients will obtain a considerable amount of exercise around their own house in the many details of housekeeping. But even here, the patient must remember that she must not overdo; she must not lift heavy pieces of furniture, and she must not do a hard day's washing. In many cases, of course, this can not be avoided, but when necessary work must be done, the patient must try to plan the work so that as little as possible is done during the time that would be a menstrual period were she not pregnant. This phrase, 'the menstrual period were she not pregnant,' must be remembered throughout the entire pregnancy, and the reason for it is that the uterus is more irritable, has a greater tendency to contract, with a possible miscarriage following, at this time than at any other.

"Whether we shall allow pregnant patients to work during their pregnancy has to a slight extent been settled for us. In some of the States, pregnant women are allowed to work in the mills up to within four weeks of their expected confinement. This varies in different parts of the country; but our legislative bodies have recognized the fact that the pregnant woman should not work up to the date of confinement. That, however, is a very uncertain date, and the result is that many women work up to the

very day they are confined. Until our laws are better framed, this condition will continue to exist. It surely is not right and should not be allowed, but the economic situation in many families is such that the woman of the family feels that she must work to help eke out the man's meager income. There is no doubt that tremendous strides can be made in this respect in the care of the pregnant woman, but it can not be done unless the public appreciates the danger that comes to the pregnant woman and her unborn child from working at this time, and will safeguard her in every possible way.

"*Fresh Air and Recreation.*—Fresh air and recreation are important. If the patient finds that she is unable to get out a part of each day and have the walk that is necessary, she should do the work that she does around the house with her windows open as wide as possible. It is a makeshift at best, but it is better than nothing. As far as recreation is concerned, any of the simpler forms of recreation are not only allowable but essential for the patient's well-being. Many women lead a humdrum existence with practically no form of recreation. With the wide use of the automobile, however, much pleasure can be derived from carefully planned rides. No long rides over rough roads should be allowed. Long touring not infrequently causes abortions, and if the patient has shown the slightest suggestion of miscarrying, the automobile should be forbidden. Riding in the front seat causes very much less jarring than in the back seat. Driving herself does no harm provided she drives carefully and slowly over good roads at a moderate speed—not over twenty miles an hour. The time may come in the pregnancy, however, when automobile riding becomes very fatiguing, causing backache and other discomforts. When this does occur, it is very much better for the patient to stay out of the automobile entirely. The automobile, carefully used, is without doubt a splendid means of recreation, but carried to extremes it is an abuse that causes many miscarriages. Every individual patient must be told by her own physician what she can do. No two patients are alike.

"Long trips in railroad trains undoubtedly do cause a certain number of miscarriages. If it is absolutely necessary that a long trip be taken, it should be broken by a day or two of rest, and the trip should not be taken during the time that would be a menstrual period if the patient were not pregnant. The same may be said of long sea trips. The fundamental thing to be remembered is that when a patient is pregnant she should stay where she can be properly looked after, and not go traveling about the country.

"The question of fresh air in the sleeping room is also very important. Every patient should sleep with her windows open. Many women feel the need for fresh air especially marked as they go on in their pregnancy. For this reason many patients feel a sense of oppression when they go to the theater or into close and crowded halls.

"Any mild form of exercise which gives to the patient a sense of well-being and recreation is good for her, and should be encouraged in every possible way, but if the simplest sort of exercise causes fatigue, her routine must be carefully studied and rearranged by her physician.

"*Rest.*—Every patient should so map out the schedule of her day that she will lie down at least one hour with her clothes off, especially with her corsets off if she is wearing them, in order to have a complete rest. Those who can do this—and many more can do it than think they can, if they plan their work carefully—go through pregnancy in much better condition than if they had no rest. We appreciate that it is a difficult thing for many patients to accomplish this rest. If they can not do it for an hour at a time, they can do it for half an hour morning and afternoon to great advantage. Especially should a working woman who is pregnant be given a period for rest in the morning and again in the afternoon.

"*Sleep.*—Important as are exercise and recreation, sleep is more important, and every patient should sleep at least eight hours every night. Undoubtedly many patients sleep less than this, and for a while go along apparently satisfactorily, only to notice in the course of a few months that they begin to feel very tired and not equal to doing the things that they usually do. When one questions their mode of living, one finds many times that sleep is the one necessary thing that is not being obtained. Many patients have an overwhelming sleepiness in the first two or three months of pregnancy, which annoys them very much. They often think something serious is happening. If by careful physical examination it is found that all the organs are doing their work satisfactorily, it need give no cause for worry, and assurance can be given that it will soon pass off.

"*Baths.*—During pregnancy the skin must be kept in good active condition. This can not be done unless daily baths are taken. Warm tub baths are essential, but hot soaks must be avoided, especially at the time that would be the menstrual period. If the patient has been accustomed to cold baths, there is no reason why she should not continue to have them, provided she reacts perfectly well following each one. But if on the contrary she is thoroughly chilled without the sense of well-being that comes from cold baths, she must not continue them. Sea-bathing does no harm provided the water is not too cold and there is no high surf. Neither does careful swimming do any harm; but strenuous swimming and diving must be avoided. It must also be added that patients who do not react well from sea-bathing must not continue it.

"*Bowels.*—The care of the bowels is one of the most important points. The patient must have at least one good satisfactory movement a day. If the fact is recalled to her that the baby is growing rapidly inside the uterus with all its products of growth thrown off into her own system, she will at once appreciate the need of getting this material out of her system regularly and completely. This can be done only if she has satisfactory movements each day, combined with a satisfactory urinary output and action of the skin.

"The majority of women while they are pregnant need to have some mild cathartic which the physician in charge should advise. A simple cathartic which will give one satisfactory movement a day is the best. Many patients are fearful of getting the habit of taking a cathartic at this time, for they are afraid they will not be able to overcome it when the pregnancy is finished. The habit will not be acquired, if satisfactory care

is taken as soon as the baby is born. Even if a habit is acquired, the risk because of insufficient bowel movements is much greater than the discomfort that may arise from the formation of the habit. She may be able to get along satisfactorily without a cathartic the first few months of the pregnancy, but in the latter half it is always advisable to take some mild cathartic at least twice a week until the pregnancy is finished. Suppositories and enemas are not at all satisfactory, as they empty the lower bowel only and must not be depended upon.

"*Kidneys.*—The patient should pass at least three pints of urine in the twenty-four hours. Once a month, perhaps, it is important that the amount be known accurately. The twenty-four-hour amount of urine is measured by passing the urine at a given hour in the morning, and then collecting and measuring all of the urine that is passed from that hour to and including the same hour the next day. Unless the physician asks especially for the twenty-four-hour amount, it is sufficient to measure the urine up to the time that three pints is passed, noting the time of day. Then, of course, the remainder that is passed shows that the patient is passing well over the necessary amount. At no time should the urine be of high color. It should always be a very light, straw color. If the patient notices that the urine is of high color, she must at once drink large amounts of water in order to keep the secretion of urine up to the minimal amount. Examination of the urine should be done by the physician at least once a month for the first five months, then once in three weeks for the next two months, and the last two months once a week. If at any time abnormal conditions are found, the physician may call for daily specimens of urine.

"*Skin.*—The bowels and the kidneys are the two principal means by which the patient rids herself of the products of the baby's growth and of her own metabolism. The skin is the third means. The invisible perspiration that is going on constantly over the entire body is an important part in the well-being of the patient. The skin of the body must be kept clean and the pores open by daily bathing. It is for that reason that the warm bath already spoken of is so essential throughout pregnancy.

"The discolorations that come in various parts of the body during pregnancy need only be remarked upon and explained. The dark line running from around the navel downwards and upwards is sometimes very marked, especially in brunettes. The increased dark areas around the nipples are sometimes very marked. As the patient increases in size and puts on weight, little red lines appear on the abdomen and on the hips, sometimes on the breasts, especially on the under sides of the breasts. These lines are due to the stretching of one of the layers of skin. They often give a sensation of burning or tingling, but much more frequently they disturb the patient because of the appearance rather than because of any discomfort that they cause. There is nothing that can be done to stop them. Sometimes the tingling can be relieved by gently rubbing in olive oil, but nothing can be done to remove these lines. When the pregnancy is over the redness of these lines fades and they become white. They remain always, but require no treatment. Many patients show dark blotches on the face, especially over the cheeks. Similar blotches may appear on other

parts of the body. They are due to an increased amount of pigment which is deposited in the skin. To some patients these blotches are most disturbing. Little can be done to lessen them, but assurance can be given that when the pregnancy is over the spots will fade and the patient will regain her original complexion.

"*Breasts.*—The breasts begin to enlarge very early in pregnancy, especially in the first pregnancy. They become much more firm and many times are very tender. The tenderness and the tingling, of which many patients often speak, come at the time that the patient would menstruate were she not pregnant. The breasts are a very sensitive part of the organism, and patients must be careful to protect them from blows. Just outside the nipples in a ring are a few little glands which enlarge quite a bit during pregnancy—the so-called 'glands of Montgomery.' Usually it is just noted that they are enlarged, and rarely do they cause any trouble. Occasionally they become infected and may break down. The nipples themselves must be kept clean, but the secretion which sometimes exudes from them and dries in crusts should never be picked off with the finger nails. Whenever any crusts are seen to form, a simple ointment, such as cold cream or lanoline, may be put on them at bed time, and when the morning bath is taken the crusts are softened and come off with the bath. If the nipples have not the normal formation, the physician in charge will say specifically what directions he wants carried out. Do not begin to manipulate the nipples, to wash them or handle them, unless specific orders have been given.

"*Clothing.*—The fundamentals to be remembered regarding clothing are that the clothes must be warm; they must not be tight around the abdomen, and all that can must hang from the shoulders. At the present day, even with a very small expenditure of money, attractive maternity gowns may be had. There is no need for pregnant patients to appear unsightly with ill-fitting garments. The underclothing in cold climates should be warm in winter, of the union-suit type. The present-day fashion of wearing very light undergarments is dangerous for the pregnant woman because of the danger of chilling the body and consequent colds. The corsets for the first three or four months may be of the type to which the patient is accustomed, with the understanding that as she increases in weight and size they are to be let out so that at no time do they mark the abdomen. They should never give a sense of pressure. The corsets may be pulled in for support snugly around the hips, but at all times must be loose over the enlarging abdomen. At the fourth or fifth month of the pregnancy the larger or stouter patients especially may want to put on maternity corsets. There is no special maternity corset that is better than others. One patient may like one type of corset and another may always wear a totally different one, both perfectly adequate and giving proper support. The essential thing to remember is that the corset must be comfortable, must give good support in front for the enlarging abdomen. Because a patient is pregnant is no reason that she should put on corsets if she has never worn them before. They are entirely unnecessary and many of the present-day athletic women do perfectly well without wearing any at all, and are comfortable throughout their entire pregnancies.

"The shoes should be comfortable, well-fitting, and with low heels. High heels put an extra strain on the patient's back muscles, to say nothing of the danger that they cause the patient from tripping. They ought not to be allowed, and in every possible way patients should be urged to wear the sensible, well-shaped, low-heeled shoe. Round garters are forbidden, for they cause added pressure on the veins of the legs which are pressed upon greatly by the enlarging uterus.

"*Teeth.*—For generations past it has apparently been impressed upon women that as soon as pregnancy begins they should have no dentistry done, and it is for this reason that the old saying arose, 'For every child a tooth.' Nothing can be further from the truth. As soon as a woman knows that she is pregnant, she should have her teeth examined by a competent dentist, and the necessary work done. If the dentist says that a tooth should be extracted, there is absolutely no reason why it should not be done. No difficult, painful work that can be avoided need be done, but for the dentist to keep the patient's teeth in good condition is exactly as important as it is for the physician to carry her through in good condition. The two are closely related, and some of the ills of pregnancy can be referred directly to bad teeth.

"Not infrequently when patients are examined after a pregnancy, it is found that many teeth have little cavities and that much attention is necessary. Many of these can be avoided if the patient will brush her teeth regularly after each meal, and, if she has nausea with the belching up of acid-tasting secretions, rinse her mouth with milk of magnesia to counteract the action of the acid on the enamel of the teeth. If she makes a special effort to adopt a satisfactory diet with a good supply of the leafy vegetables, she will help herself greatly to prevent the decaying of her teeth.

"*Hair.*—Many patients complain that a great deal of their hair drops out during pregnancy, but more especially after the pregnancy is completed. We know of no way to stop this absolutely. Help may be given by keeping the scalp in good condition through shampooing and massage, but it will not stop the falling out of the hair in all cases. In most cases the hair soon grows in again.

"*Intercourse.*—Undoubtedly the majority of patients have intercourse during their pregnancy. How frequently intercourse is the cause of miscarriages in the early weeks of pregnancy is unknown, but it is certain that it is a potent cause. Many patients are averse to all intercourse during pregnancy. In a small number the desire for intercourse apparently is greater. Every patient should know that there undoubtedly is a risk of miscarriage from intercourse, and it should be strongly advised against at what would be a menstrual period were the patient not pregnant. Intercourse in the middle three months of the pregnancy is of less risk than at other times. It should be forbidden absolutely the last two months, because of danger of infection.

"*Maternal Impressions.*—Of the superstitions that surround pregnancy, none cause quite so much worry and discomfort as the stories that are told in regard to maternal impressions. In a word, the superstition is

this: If the patient hears of or sees some very unpleasant sight, she will receive such a shock that her baby will be marked. Gossip-mongers who like to repeat such stories, especially to the woman who is having her first baby, always have some such tale to relate when a baby exhibits some abnormality. From a physiological point of view and as a matter of fact, there is absolutely no possibility that anything of this type can in any way mark or cause a malformation in a baby. There is absolutely no physical connection between the mother's blood and the blood of the unborn child, nor is there any nervous connection between the mother and the baby. The pregnant woman must not be allowed to think that anything that she may do or say or think can in any way cause her baby to be marked or malformed. The causes of these malformations and the markings, which are really a very rare occurrence, are not known, but we do know that the beginning of such malformations takes place very early in the pregnancy, not infrequently before the patient herself realizes that she is pregnant.

"*Visits to the Physician.*—Patients, on the whole, do not see their chosen physician as frequently as is advisable. It has already been noted how seldom women present themselves for supervision as soon as they think a pregnancy has begun. The importance of early supervision can not be insisted upon too strongly. Satisfactory care of the pregnant patient will not be given until this is the rule and not the exception. During the first five or six months the patient must see her physician regularly once a month; for the next two months once in three weeks, and for the last two months once in two weeks. This is the minimum that can be regarded as satisfactory. In order to keep in still closer touch with the physician, specimens of the urine are sent to him between the visits. By this plan contact with the physician is kept every two weeks during the first part of the pregnancy, every ten days in the middle, and every week during the last two months. By this arrangement any changes from the normal are quickly discovered and proper steps may at once be taken to combat the complications.

"If the patient is registered at a clinic for the care of pregnant women, the same plan is carried out—the visits to the clinic are made at the times requested and the nurses make the visits to the patient's home between these clinic visits or the patient comes to the mothers' classes. At each visit the urine is examined, the patient's general health is investigated, and the various medical procedures are carried out. What these are varies in each physician's routine or at each clinic. A blood test, the so-called Wassermann, is the usual procedure in clinic work. It, however, is not done in private work as often as it should be.

"Whether the pelvis is measured the first time the patient presents herself to her physician depends upon his routine. Whether it is done at the first visit or at some subsequent visit is immaterial so long as it is done before the seventh month. In clinics patients are usually measured the first time they appear. Measurements show the physician the type of pelvis the patient has. They will in but a few cases definitely tell the physician whether or not a normal delivery may be anticipated. It is for this reason that as pregnancy advances careful estimation of the size of

the baby and its relation to the pelvis must be made from time to time. It is only by this careful oversight that emergency operations can in a great measure be avoided.

"In any study of the disasters that come in pregnancy and labor, it is found that the large majority occur in those patients who have had inadequate medical supervision. A careful physician knows before labor begins which cases are likely to prove abnormal, and he plans beforehand the best method of delivery. He is not forced to do hurried, ill-advised operative work on patients who have not been properly studied. It is, therefore, a dual responsibility that is present. The patient must present herself to the physician early for adequate medical supervision, and the physician must give to his patients conscientious care according to the best medical teaching of our time. When such cooperation is present, the untoward disasters that to-day are all too frequent will be greatly diminished. Pregnancy is a normal physiological function, but it is a condition which may, without proper supervision, become very abnormal, calling for the exercise of quick decision and skilled medical attention.

"DISCOMFORTS AND ILLS OF PREGNANCY.—*Nausea and Vomiting.*—The first of the discomforts to appear following the beginning of pregnancy is the nausea and vomiting. Some patients have nausea the entire time of their pregnancy, with occasional vomiting. Other patients have no nausea to speak of at all. In another group the nausea appears only in the morning, especially on rising; and a small percentage of patients have the nausea in the late afternoon and early evening. At times there is nausea without vomiting, but more commonly the nausea, which may come in waves, is accompanied by vomiting. The majority of patients, having heard that nausea and vomiting are very common in pregnancy, make no effort to help it and all too seldom consult their physician. There is much that can be done if the patient will consult her physician early and keep herself in the best physical condition. The patient who has a slight degree of nausea and vomiting can be helped much by eating some simple food before she gets out of bed, even before she raises her head from the pillow, and then lying still in bed for half to three-quarters of an hour. She may then slowly dress and have her breakfast. A short rest after breakfast will help much, and then she can usually begin the day's routine. During the day she should never go longer than three hours without food, and care must be taken not to become overfatigued, for nausea is brought on constantly by overfatigue and worry. If the nausea and vomiting persist and grow steadily worse, a physician must be seen and careful medical and nursing care instituted at once, so that the patient will not go from bad to worse and become a seriously sick woman.

"*Salivation.*—A few patients are very seriously bothered with a large increase in the amount of saliva that may be secreted during pregnancy. The amount secreted varies very much, but occasionally the patient pours out large amounts constantly. Unfortunately, drugs have but slight effect on this condition. If it is at all marked, the patient should consult her doctor in regard to it. Under no circumstances should she constantly swallow this saliva.

"*Heartburn, Gas, Flatulence.*—Heartburn in its milder forms is a very common accompaniment of pregnancy and is relieved by the simplest remedies, soda-mint tablets or bicarbonate of soda, a saltspoonful in a half glass of water sipped slowly, or a somewhat better way is to take a saltspoonful dry on the tongue and swallow it quickly with a drink of cold water. Heartburn may be caused by indiscretions in diet, and any article of diet that is known to upset the patient when she is not pregnant should not be eaten during her pregnancy. A few patients are relieved by taking a few ounces of cream a half to three-quarters of an hour before the heartburn usually appears. To many, however, this gives no relief. The alkaline waters, taken in large amounts, will help greatly for the time being, but in some cases the heartburn is a manifestation of poisoning that is going on as a result of the pregnancy and will not be cleared up or improved until this poisoning, the 'toxemia of pregnancy,' is overcome. In a few patients nothing seems to overcome the distress, and the discomfort is present until the end of pregnancy, but in most cases temporary relief can be obtained by taking large amounts of alkalies. The flatulence which often appears in pregnancy is helped materially by regulation of the diet and the use of some intestinal antiseptic or tonic. In many cases, however, the end of pregnancy alone relieves the distress.

"*Increase in Weight.*—During the first weeks of pregnancy many patients, because of nausea and vomiting accompanied by lack of food, lose weight, but after the third month they begin to gain. Unless an accurate record of the patient's weight is kept, she often will put on too much weight. The discomfort that arises from this rapid increase in weight is sometimes very great. The patient also runs a greater risk of developing a toxemia of pregnancy. The average woman gains in her pregnancy from ten to thirty pounds. The short stocky woman is very apt to gain more than the tall thin one. Occasionally a patient will gain fifty or even sixty pounds of weight, but when it is found that the weight is increasing as much as this she should be put on a careful non-fattening diet. When a patient increases in weight rapidly, shortness of breath is very apt to appear, due not only to the increase of her own weight, but to the increase of the pressure of the growing uterus in the abdomen. With this increase in weight she may complain of more or less constant pain in her legs and in her feet. Careful examination will reveal the fact that the arches of her feet have given way because of this rapid increase of weight.

"*Varicose Veins.*—The enlarging uterus, as the weeks go by, presses more and more on the pelvic veins and in many instances varicose veins of the leg appear. At the beginning only little dilated blood-vessels are seen on the legs, but gradually as the pressure increases these veins stretch until frequently large varicose veins make their appearance. At first the patient simply complains of their appearance, then she may complain of slight burning or tingling sensations in the legs. If the symptoms are slight, no treatment is necessary. Much relief is obtained if the patient lies down for an hour morning and night. In more marked cases great relief can be obtained by having the patient raise her legs to right angles to the body, in order to help the blood flow out of the distended veins. A

three-inch flannel bandage cut on the bias may be applied to the legs, starting from the toes, and will give great relief. Adhesive plaster, put three-quarters of the way around the leg, supporting the veins, will also give much relief; but none of these simple aids should be used without the physician's consent and knowledge. In a very marked case of varicosity, an elastic stocking may be necessary.

"*Hemorrhoids.*—Hemorrhoids (piles) is the name given to varicose veins of the rectum. They are a very annoying and distressing complication of pregnancy. If they appear at all, if any discomfort is present in the rectum or in the anus, the patient's physician must be told of it at once and appropriate measures carried out.

"*Cramps in the Legs.*—Annoying cramps in the legs, appearing usually after the patient has gone to bed, may appear in any part of the pregnancy, but they usually come in the latter half. Much help can be given to this condition by a gentle massage of the legs before the patient goes to sleep each night. It is not always possible to stop them, but massage will do more good than any other one thing.

"*Relaxation of the Pelvic Joints.*—As pregnancy advances, the three joints in the pelvis, the two behind and one in front, relax. Very commonly the relaxation of one or the other of the posterior joints gives pain, running down the leg on the side which relaxes. Much help can be given by a proper supporting girdle or corset, but when it is at all marked manipulation may be necessary to put the joint back into its proper relations.

"*Leucorrhea.*—The discomfort caused by a marked leucorrhea, which is the name given to the whitish discharge which comes from the vagina, is frequently very annoying and distressing. Under no circumstances should douches be taken to overcome this condition unless it is on the specific advice of a physician. If the leucorrhea is accompanied by an inflammation of the vagina or of the urethra, a careful examination must be made to determine the cause. If it is caused by a gonorrheal infection it must be treated efficiently through the pregnancy, in order that it may not cause serious complications at the birth of the child. For the simple leucorrhea that practically all women complain of, especially toward the end of pregnancy, no treatment, except cleanliness, should be begun unless it is on the specific orders of the physician.

"*Pendulous or Relaxed Abdomen.*—In some patients, after they have had one or more pregnancies, the abdomen hangs down in each succeeding pregnancy and becomes what is called a pendulous abdomen. This condition is due to the fact that the abdominal muscles are greatly stretched during the pregnancy and do not regain the proper tone. This is one of the reasons that patients are kept in bed after the birth of the child, and that exercises are given them while they are in bed. If the condition is present, the patient will obtain much relief if she wears a well-fitting corset with support from below, or a well-fitting binder. If the condition is at all marked, the physician will specify the exact means of support which will give the patient the greatest relief.

"COMPLICATIONS OF PREGNANCY.—It is obvious that all of the complications of pregnancy can not be discussed here, and it is my wish to speak

only of miscarriages, the toxemias of pregnancy, bleeding in pregnancy, and sepsis, commonly called blood-poisoning.

"*Miscarriage.*—In the ordinary use of the word among the laity, a miscarriage means the emptying of the uterus before the time that it is possible for the baby to live. From a medical point of view, the division is made more clear. An abortion takes place when the ovum is expelled from the uterus in the first three months; a miscarriage, when it is expelled in the next three months; and a premature birth from the sixth month on until maturity arrives. A still further distinction is made when a patient takes some artificial means to interrupt her pregnancy. This is called a criminal abortion. Any means whatsoever that is taken to interrupt pregnancy from the moment that impregnation takes place is a criminal procedure. Many people think that a pregnancy can be interrupted without criticism up to the period when the woman feels life. That is an idea that should be strongly combated, for the moment that conception takes place a new life is started and any interruption by any method is a criminal procedure. In certain States, when from any cause a pregnancy threatens the patient's life, a 'therapeutic abortion' may be performed after consultation has been held with one or more physicians. In many States, however, this procedure is not recognized as a lawful one. It is done, however; but any therapeutic abortion is done openly, following a consultation, and is recognized as allowable.

"The occurrence of miscarriages is very common. How frequently early miscarriages take place is a great question, and there can be no accurate statistics on this subject. Many patients fail completely to recognize the fact that they have been pregnant, and the miscarriage takes place so early that it is not much more than an unusual period. It may, however, be the beginning of a long period of invalidism. Most miscarriages occur between the second and third months. The causes of miscarriages are many, and when one realizes the method of growth of the ovum and its attachment to the uterus, the wonder is that more do not occur. . . .

"Any abnormal condition of the uterus, any abnormal condition of the ovum, may bring about a miscarriage. It is doubtful if sudden shock is a cause. The underlying cause is present, and the shock to the patient may be the obvious but not the real cause. The rôle that drugs play in the causation of miscarriage is questionable, for if there were any drug that would surely bring about a miscarriage it is quite certain that there would be few illegitimate children. Repeated miscarriages may come with any patient, and in order to obviate them it may be necessary for her to stay the greater part of the time in bed. This, however, should be done only on the advice and with the oversight of a physician. To avoid these early miscarriages the patient should see a physician as soon as she suspects that pregnancy has begun, in order to have a careful talk on the hygiene of pregnancy and to receive the necessary medical care.

"The early symptoms of miscarriage are pain resembling, more or less, the pain that many women have with their menstrual period, and a slight amount of bloody show. A woman who supposes that she is pregnant who has a slight show of blood must always regard it as a serious sign until it

is proved not to be. Many women think that a slight show of blood is a common thing in pregnancy. As a matter of fact, any sign of blood from the vagina is an abnormal condition and it must be determined by the physician in charge of the case whether a serious interpretation shall be put on it. The principle on which the patient should act is that it is serious until proved to be otherwise, and she must let her physician know that she has had the show of blood as soon as it appears, and not wait for days or even hours.

"Toxemia of Pregnancy.—Any woman who is pregnant may develop a toxemia of pregnancy. That is the name given to the poisoning that takes place as the result of pregnancy. The exact cause of this poisoning is unknown at the present time. It is characterized by certain signs and symptoms, chief of which are headache, lassitude, spots before the eyes, sometimes pain in the pit of the stomach, diminished amount of urine which when analyzed contains varying amounts of albumin, and a rising blood-pressure. If this poisoning goes on without treatment, convulsions appear, and the condition is then called eclampsia. A toxemia may develop at any time; eclampsia develops only very rarely when there is efficient medical supervision.

"Relatively few cases of eclampsia come out of a clear sky. Practically all are of some days, sometimes of weeks, duration, and the eclampsia appears as the result of the accumulated poisons. It is because a toxemia may appear at any time that physicians ask patients to send in specimens of urine regularly and ask to see the patients regularly. In the past years this insistence throughout the country that patients be seen regularly has brought down the number of eclamptic cases very greatly. This is especially true in the large clinics. Many clinics can show thousands of cases in which perhaps only one or two cases of eclampsia have developed. Unfortunately this is not as true of cases looked after by private physicians. The reason for this condition is two-fold: first, patients do not seek medical care sufficiently early; and second, it is all too frequently the case that medical care consists only in the patient going to the doctor, telling him that she is pregnant, making an approximate date for the delivery, and then not seeing him again until she starts in labor. An analysis of many of the disasters that appear in pregnancy shows that the patient has often not been seen until she comes into labor, or at most perhaps a day or so before delivery takes place. That of course should be an impossible situation. No patient should go through her pregnancy without intelligent medical supervision, and intelligent supervision can not be given unless the patient will cooperate with the doctor and unless the doctor insists that the patient come to see him, as has been discussed under 'Hygiene of Pregnancy.'

"There is no more terrifying condition in pregnancy than an eclampsia, and it has been well demonstrated that eclampsia can be almost completely wiped out if the patient and the doctor cooperate. If either one fails to do what progressive physicians know is the proper procedure, disaster may overtake any pregnant woman. I do not write this in order to make the pregnant patient apprehensive, but it is well to let her know that

this condition, toxemia of pregnancy, may arise at any time; that, if properly supervised, in the majority of cases no serious outcome will appear. In a very few cases even under careful supervision the toxemia of pregnancy will go on and develop into eclampsia, but those cases are very few and far between. At the present day it is almost fair to say that if an eclampsia develops, some one has failed—either the patient herself has neglected to go to her physician, or the physician has sadly failed in carrying out the fundamental rules of the hygiene of pregnancy.

"Bleeding in Pregnancy.—In the earlier section we spoke of the bleeding that sometimes occurs in the early part of pregnancy, due to a miscarriage. As pregnancy goes on, if bleeding occurs, the patient must always regard it as a more serious sign. No matter how slight a bleeding appears, she should go to bed and at once notify her physician. He will determine whether the bleeding is serious, but under no circumstances should the patient continue up about the house with her daily routine while she has a slight show of blood from the vagina. She must not believe the story that bleeding in pregnancy is a normal condition that often occurs, for it does not ever occur in a normal case. In the latter three months of pregnancy the bleeding may be a very serious sign, and if it is not carefully and intelligently managed the patient may suffer very serious results.

"Sepsis, Puerperal Fever, Childbed Fever.—In April, 1843, Dr. Oliver Wendell Holmes published an article on 'The Contagiousness of Puerperal Fever,' in which his final paragraph is as follows: 'Whatever indulgence may be granted to those who have heretofore been the ignorant causes of so much misery, the time has come when the existence of a *private pestilence* in the sphere of a single physician should be looked upon not as a misfortune but a crime; and in the knowledge of such occurrences, the duties of the practitioner to his profession should give way to his paramount obligations to society.' That statement made eighty-odd years ago is as true to-day as it was then. Sepsis must be regarded as a pestilence, and it must be eradicated. Any active practitioner of medicine may have an occasional case of sepsis (puerperal fever, childbed fever), but if he continues having such cases now and again, he should as Professor Holmes has stated, think of his paramount obligations to society. He is a danger to the community in which he practises. Many thousands of physicians go through their professional careers with only a very rare case of sepsis occurring in their obstetrical work. If these thousands of physicians can do that, then all physicians can do it, but not unless they have developed a conscience, and not unless they do good, clean work on all occasions. Septicemia following childbirth, in the very large majority of cases, is brought to the patient by unclean methods of delivery or of operative work. Until the laity takes the stand that puerperal sepsis must be eradicated, no marked improvement will take place. It is a blot on our country's death-rate that we lose so many mothers each year from puerperal sepsis. I know of no way of overcoming the terrible mortality from this complication except by reiterating again and again that deaths from sepsis are unnecessary in all but a small percentage of cases. In a few cases sepsis will appear no matter how careful the physician may be.

"The point that I want to make is that when a physician every little while has a case of sepsis in his practise, that man is a dangerous practitioner of medicine, and if we are going to improve our mortality records he must be eliminated from obstetrical work.

"PREPARATIONS FOR DELIVERY.—*Home or Hospital.*—The patient must decide, with the help of her physician, whether she will have her baby at home or at a hospital. More and more patients are being delivered in hospitals, and the reason for this is that the hospitals are much better equipped for obstetrical work than they were a few years ago. If a patient is to have her baby in a hospital, she must find out through her physician whether the hospital is well equipped for obstetrical work. There are too many so-called hospitals taking obstetrical work which are only hospitals in name. They are not equipped in any way to look after a delivery satisfactorily. Rather than have a patient go into such hospitals as these, it is far better to have her at home with the necessary supplies there. On the other hand, in a hospital, well equipped according to modern surgical standards, where there is no overcrowding and where good clean work is constantly carried on, the patient undoubtedly is safeguarded in every possible emergency. A physician sending a patient to a hospital vouches for the technique that is employed at that hospital, and it behooves him to know that the technique is satisfactory and up to date.

"If, afer careful prenatal examination and care, the patient is found to have some abnormality, she is unquestionably better off in a well-equipped maternity hospital. If there is no such hospital in the community where she lives, and an abnormality is discovered, she should go to the nearest good hospital and should not consider being delivered at home. In cases where prenatal care indicates that the pregnancy is advancing normally and there is no reason to anticipate any complications, there is no reason why she should not be looked after at home.

"The comparative cost of being cared for at home with a trained nurse or in a well-equipped maternity hospital is about the same. Of course, the cost is much less if the patient is looked after at home with a visiting nurse coming in for the daily nursing and being present at the delivery. When the nursing is done by a semi-trained attendant, again the cost is lower at home than in a hospital. By far the majority of patients are delivered in their own homes, and emergency work alone is sent to the hospital. In the large cities, however, in these days of apartment life, there can be no adequate provision for a delivery at home. Under these circumstances a hospital is much the better place for the average patient. In rural communities where the distances are great and the physicians few, unquestionably patients must plan carefully for their deliveries, and in many instances will have to go to a city or large town to secure adequate care.

"If the patient makes up her mind, with the help of her doctor, that it is reasonably safe to be delivered at home, there are certain preparations that must be made. A sunny quiet room should be chosen. Often there is no choice whatever of the room; one is available and that is taken. If possible, it should be in close proximity to a bathroom; but many times a

bathroom is a luxury and not a necessity, for many thousands of cases are satisfactorily delivered each year in homes where there is no bathroom. The room should be clean, and not recently used by infectious or contagious diseases. It need not be stripped of its furniture or hangings, but unnecessary furniture should be removed. A single bed, with the top of the mattress thirty to thirty-five inches from the floor, is ideal. It is not within the means of many families, however, to provide a single bed, and a low double bed must be used which is unsatisfactory from every point of view. Even the low beds can be made satisfactory by placing the four posts on blocks of wood of the height necessary to bring the bed to the desired distance from the floor." (Dr. Robert L. DeNormandie of Harvard Med. School.)

Birth proceeds by a law immanent in the Creator's design, of which nature hides the secret. Its pathologic features are the result of original sin and of the race's accumulated violations of nature's laws: no normal labor is painless.

Most primiparae and many multiparae experience the prodromal stage of labor. Two or three weeks before labor the uterus sinks forward and downward, due to the gradual sinking of the child's head into the true pelvis. This is technically called *lightening*. It is favorable for a successful delivery. The passage of the fetal head into the inlet augurs a successful passage into the outer world. The majority of serious pelvic deformities are at the inlet.

Lightening relieves pressure in the upper belly and increases pressure in the pelvis.

However, some labors come on suddenly, often with extreme embarrassment and inconvenience. A pregnant woman should be very prudent.

Usually a day or so before delivery the mucous plug which filled the cervix is expelled together with some mucus and blood. At this time the vulva is enlarged, succulent, patulous.

Parturition naturally divides itself into *three stages.*

The first stage is the *dilation stage.* It begins with the regular uterine contractions and continues until the os externum cervicis is so dilated that it is almost flush with the vagina, making the continuous "parturient canal".

The *second stage* continues the process until the fetus is expelled.

The *third stage* is the *placental stage.* In this period the placenta and the membranes are expelled, and the contraction and retraction of the uterus are completed.

In the first stage the regular uterine contractions are about fifteen minutes apart. These are the "pains." They last from thirty to ninety seconds. They vary in different women. The woman of strong will bears bravely childbirth pains and thus aids the physician and nurse: the woman of weak mentality cries and shrieks and demands an anaesthetic or instrumentation. Her attitude may give to her pregnancy a pathologic trend.

With the progress of delivery the pains grow stronger; the intervals grow shorter.

In normal labors it is the soft bag of waters which dilates the cervix to allow the fetus to pass. This is nature's gentle method. If the liquor amnii escape before dilation of the cervix, we have a prolonged, painful dry delivery, frequently demanding surgical interference.

At the child passes through the dilated cervix normally the bag of waters ruptures.

It seems more correct to call the whole amniotic sac the bag of waters.

Sometimes the amniotic membrane covers the head of the child when born. An old superstition declares such child to be highly favored by nature. The caul must be quickly removed to allow the child to breathe.

In the second stage every two or three minutes the pains occur. They are stronger and create in the parturient the intense desire to expel the foetus. She forces the abdominal muscles to drive the foetus downward. "The parturient is working hard, indeed, the process is rightly called labor. Her pulse is high, the veins of the neck stand out, the thyroid is swollen, a fact which Aetius in 1567 said caused goiter, the face is turgid, the body bathed in sweat." (De Lee) The progress toward the terminus fills the parturient with hope.

The normal presentation is occiput of the foetus pushing itself out with a rotary movement from behind the pubis, while the forehead, face, and chin roll over the perineum.

The parting of the labia is gradual; the head appears and recedes until the resistance of the parts is overcome.

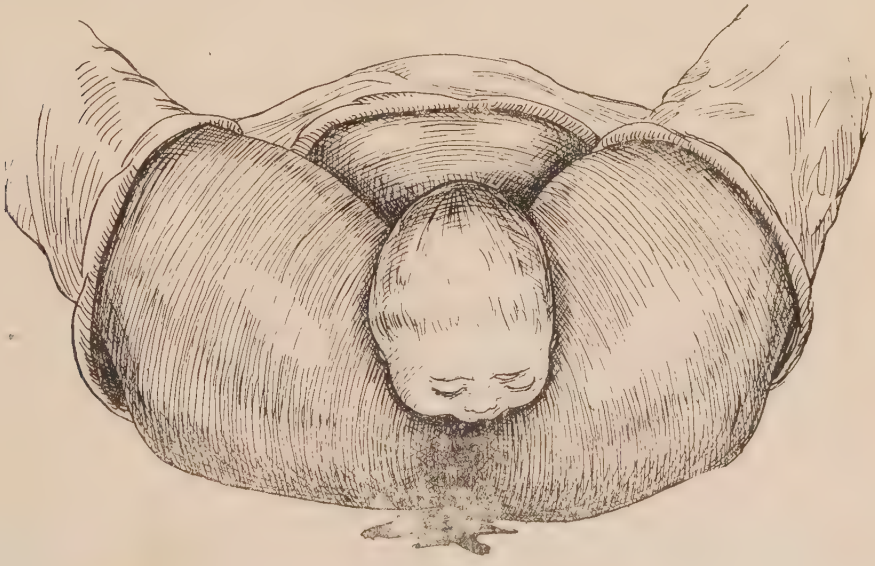

Fig. 100—Head-delivered. (De Lee)

Sometimes the "head must be restrained by the accoucheur to prevent lacerations. The passage of the fetal head through the outer orifice of the vagina is the most painful part of normal labor.

The delivery of the shoulders follows after a few minutes, and then by one final expulsive effort the whole child lies gasping between the thighs of the mother. The mother is exhausted, but relieved: it is over.

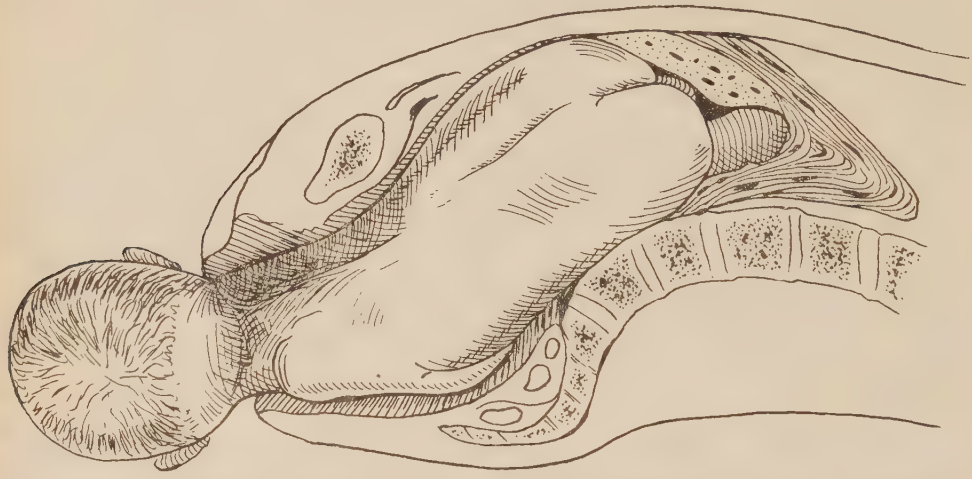

Fig. 100—Frozen Section of a Woman Who Died after Delivery of Head. (Zweifel)

In every delivery the anus dilates, and some fecal matter may be excreted. The vaginal passage is lubricated by a flow of the liquor amnii and mucus.

A chill may follow labor: it is rarely pathologic.

The *third stage* of labor is the expulsion of the placenta. After the child is born the uterus contracts to the size of a cocoanut. In the meantime the physician has tied and severed the cord.

In the law of nature the fetus is a separate individual at conception; but in many countries and states the legal status of the child as an individual is established when the cord is severed.

After expelling the fetus the uterus is quiescent for from five to twenty-five minutes. Then gentle contractions set in. The puerpera feels a drawing sensation. The placenta is detached from the uterine wall. If no interference is effected by the accoucheur it may require an hour or more for the uterus to expel the placenta. As it comes forth it peels the membranes off the uterine wall and draws them forth with itself.

The uterus again contracts into a hard lump: the third stage is finished.

It is evident that the passage of the fetus through the cervix should cause pain. The cervix is painfully stretched and sometimes lacerated. The greatest anguish of childbirth, the tearing pain as the fetal head goes through the vulva, is readily explained. But why the first contractions of the uterus should be painful is unknown.

Many causes influence the length of labor. The health of the woman, her age, her pelvic measurement, the size of the fetus, and the number of the pregnancy are coefficients. De Lee maks the following estimate:

"Primiparae, first stage sixteen hours; second stage one and three-quarters to three hours; third stage, from a few minutes to several hours."

Extremes run from an hour to several days. As a rule primiparae have longer labor, because the cervix, perineum, and vulvar orifice must be for the first time dilated.

In giving birth the puerpera loses about one-tenth of her weight. There is always a loss of blood: it may become pathologic.

The unborn child is in a state of apnea: it does not respire; its oxygen is furnished through the umbilical cord. In a slow delivery the delivered head may gasp and set up extrauterine respiration. It will thus be in danger of filling its mouth with mucus, blood or fecal matter.

Prompt action of the accoucheur is necessary. In normal cases respiration is set up a few moments after the baby is born.

At birth the circulatory system of the infant undergoes an important adjustment, and soon establishes the circulation of adult life.

"The highest mortality that befalls the human race in one day occurs on the day of birth." (De Lee). This would include still births, deaths during labor, and deaths shortly after birth through the trauma of labor. Probably in our country one out of every 200 parturients die through the reproductive function.

The lowest death rate of babies in the United States under a year old ever attained—72.2 a thousand, compared with 78 in the year before—is the record for 1924. Of 30 states whose urban records are available 26 show reductions in infant mortality in 1924 compared with 1923. Improved sanitation, better nursing and a higher standard of living are reflected in these encouraging figures.

An emergency may arise wherein the priest may be called to give advice in childbirth.

To calculate the probable date of a full time confinement add seven days to the date of the last menstruation and from that date reckon nine calendar months as the interval.

A pregnant woman should select the best obstetrician possible, having regard to his skill and upright character. She should be carefully examined to determine whether she is able to be delivered in the normal way. If her pelvis be so narrow that there be well founded fear that she can not give birth to her child, she should authorize the physician to perform the Caesarean section. The vulgar fear of this operation is not justified: when performed by a skillful surgeon it is less dangerous than craniotomy and its kindred crimes.

The chief difficulty is that the low grade practitioner believes himself competent to empty the uterus by an abortion or craniotomy, whereas only a skillful surgeon can bring forth the living foetus by celiotomy. It is a deplorable fact that many rural districts, small villages, and the poorer sections of our cities are medically dependent on inferior physicians. In such cases therefore it is advisable to have the pregnant woman removed to a good hospital as the time of her delivery approaches. This advice must be tactfully given to avoid arousing the enmity of the local physicians.

The advantage of the antecedent authorization of the Caesarean section is that the authorized physician in virtue of that authority may proceed at a time when perhaps the expectant mother is not capable to decide her case.

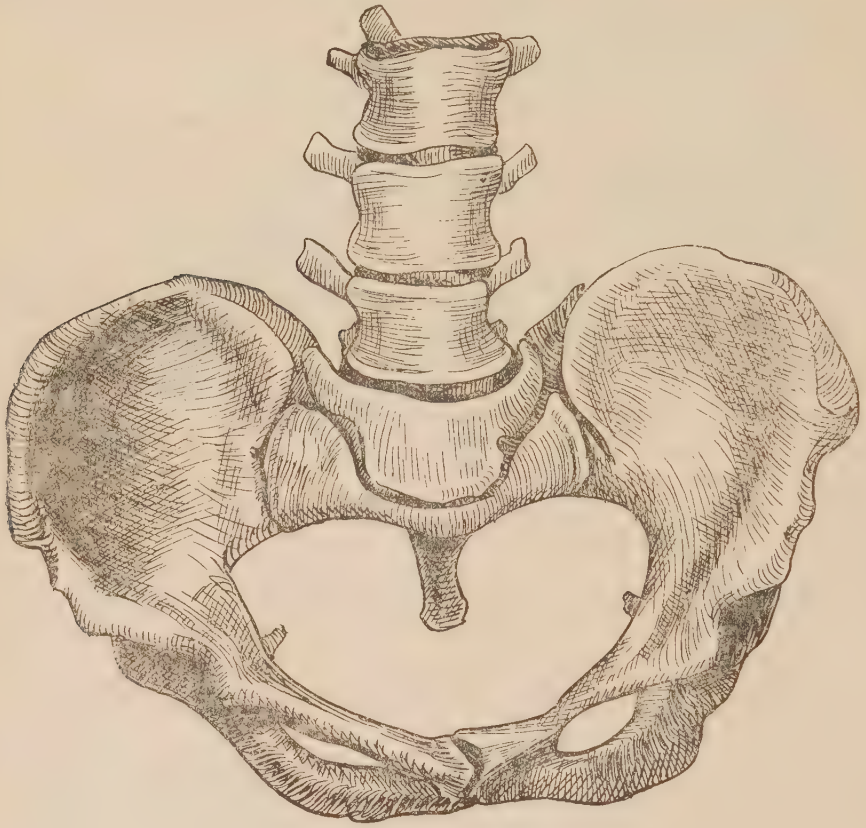

Fig. 102—Generally Contracted and Flat Pelvis. (De Lee)

Childbirth labor, viz., the process by which a woman expels from her womb the foetus, should not be hastened: let nature work, unless its process be deranged. If the bowels have not freely moved within twelve hours preceding the confinement a warm enema should be given. An effective enema may be prepared of one pint of warm soft suds and a teaspoonful of turpentine. The soap must be pure. The genital parts of the woman in labor should be thoroughly washed with warm water.

Nature's first birth process is the dilation of the os uteri. This is of uncertain duration, and attended by little or no pain. The second stage of labor, in which nature acts to expel the child, varies according to the qualities of the patient.

Primiparae usually are in labor longer than multiparae. If the woman gives birth to her first child late in her childbearing period the labor will usually be longer and more difficult. The greater rigidity of the parts render the necessary dilation a more difficult process. In subsequent con-

finements the parts dilate quicker and easier. Subject to wide variation the average duration of labor of the primiparae is eighteen hours: in multiparae it is twelve hours.

As a rule the labor pains are rapidly intermittent: the stronger and more frequent are the pains, the sooner will nature expel the child. The woman should not try to hold back the natural process of expulsion of the child in order to lessen her pain: this will only protract the labor and exhaust the strength of the woman.

The process of childbirth may come on suddenly and unexpectedly. Women have brought forth their children in public conveyances, stores, banks, theatres, churches, etc. First aid in such cases is to place some clean cloths between the mother's thighs; place the baby thereon to keep it warm; gently remove the mucus from the baby's mouth and nose; place the baby in a position in which he can breathe freely; induce respiration if the baby does not breathe; be sure that the umbilical cord is not wrapped about any portion of the child's body; cover the child warmly; and hasten the woman to a hospital.

If circumstances compel further procedure, the navel cord should be tied about two inches from the child, and again two or three inches nearer the mother. Clean tape should be used if available: in an emergency the best means at hand must be used. The cord must be securely tied. Infants have bled to death through an insecure ligature. The cord is cut midway between the aforesaid ligatures.

De Lee advises to tie the umbilical cord one-half inch from the body of the child. This is good praxis for a skillful accoucheur, but if one unpracticed in obstetrical art must tie and sever the cord it is best to leave the stump in length about two inches.

Attempts to lessen pain during childbirth are ineffectual, they may lessen it for a time, but it will be intensified before the completion of the birth. The woman should hold her breath during the intermittent pain; grasp some object with her hands and hold tightly, and "bear down" until the end of every pain. The bearing down should not be too violent; otherwise there will be danger of lacerations. The most violent expulsive pains are sometimes felt when the head of the child is passing through the outlet of the vulvo-vaginal canal or immediately thereafter. If the woman "holds back" then and loses self-control she endangers the life of the child.

Lacerations will result if the birth is hastened too much: cooperate with nature. Sometimes internal and external lacerations are inevitable. Usually it is the fetal head that causes lacerations. If there is a disproportion between the size of the fetal head and the outlet of the vagina; if the head is forced through before the parts have time to dilate; if forceps be unskillfully used; or if the foetus presents itself in an unfavorable position, lacerations of the floor of the pelvis and of the perineum will be probable. The foetus is forced down by a perpendicular expelling force; and in curving out through the vulvar outlet it presses against the aforesaid organs. The foetal shoulders more rarely effect a tear. The tear may sometimes extend through the anus.

The tissue of the cervix of the uterus is in some degree torn in every full time labor.

The dilatability of the cervix is disproportionate to the size of the foetus. These tears are increased by excessive rapidity of fetal passage, or unskillful use of forceps. Unless infected these tears usually heal spontaneously. Therefore lacerations of the outlet of the vulvo-vaginal canal should, if possible, be sutured immediately; lacerations of the uterus should be allowed to heal by the process of nature, unless hemorrhage is

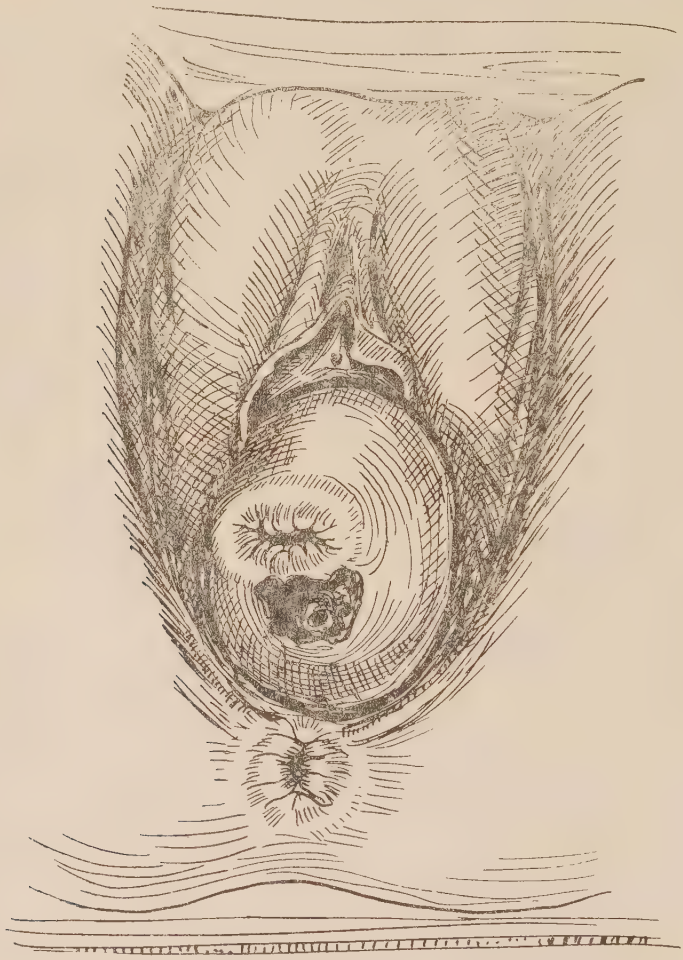

Fig. 103—Procidentia with ulcerated elongated cervix. (Graves)

excessive: in case of such hemorrhage suturing is the proper method. The spontaneous healing of the inner lacerations may create a condition where subsequent operation shall be necessary.

Sometimes during the early stages of labor the uterus itself may be ruptured. The rupture may be complete, even allowing the foetus to pass

into the abdominal cavity. Profuse hemorrhage indicates this rupture. The treatment is immediate celiotomy, removal of the child and placenta, and suturing of the uterus. The rent may be of such a nature that Porro's operation (hysterectomy) is demanded, and is, of course, lawful if the life of the woman demands it.

In case of aggravated procidentia of the Uterus, we may employ the principle that a diseased organ may be amputated, even though an indirect death of the foetus may result.

In most cases of procidentia, the gravid uterus, under palliative treatment, spontaneously returns to its normal position. Nature may be assisted by pushing the womb back into place and holding it there by tampons or air pessaries. An irreplaceable, completely prolapsed uterus is a diseased organ, and may be emptied.

The rupture is most liable where the placenta draws nutrition for the child through the trophoblastic action of the chorion frondosum.

As before stated lacerations to some degree of the mouth of the womb are usual in parturition. They are for the most part negligible. Nature unassisted will heal them. A grave rupture of the womb is a very rare accident. When it occurs the foetus is viable and should be removed at once by celiotomy if necessary. Its life within the mother shares the danger of the mother. The lives of both demand immediate delivery. A woman who has been previously delivered by the Caesarean section may suffer a rupture where the severed walls of the uterus have united. It is an adage generally true, "Once a Caesarean section, always a Caesarean section."

A slight external laceration will heal of itself if the woman will lie quietly with her knees together until the torn edges knit together. If the tear is so extensive that it demands suturing, it should be done at once.

The parts have been rendered almost insensible to pain by the bruising and stretching incident to childbirth. A quicker and better union of the parts can be obtained immediately after the delivery.

As a rule a physician can not tell whether the lacerations of the cervix of the womb are extensive enough to demand surgical aid. After childbirth the womb is simply a large bleeding wound: in such condition its lacerations can not be judged. Six or eight weeks after childbirth the puerpera should be examined by her accoucheur to determine if an unhealed tear exists in the womb. There are many remedial measures save surgery. Hot douches, tampons, local applications, proper dress and posture of the body may effect a cure, especially in young women. It is only when there is considerable hypertrophy or infection, or when carcinoma is feared that a surgical operation is indicated. This will be a denudation of the edges of the gap and a suturing of the freshened edges (called in surgery trachelorrhaphy): amputation of the cervix may be necessary in severe cases.

The vast majority of human births are normal.

Mechanism of labor.—In order to reach the outer world the child must pass through three rings, (1) the cervix, (2) the opening in the levator ani muscle within the true pelvis, and (3) the vulvar opening. The parturient canal runs straight down until it reaches the narrow pelvic plane, then it

bends back upon the dorsal pelvic border, forming a sigmoid curve which bends under the symphysis pubis and then curves downward outward to the vulvar orifice. These curves are accentuated by the passage of the foetus.

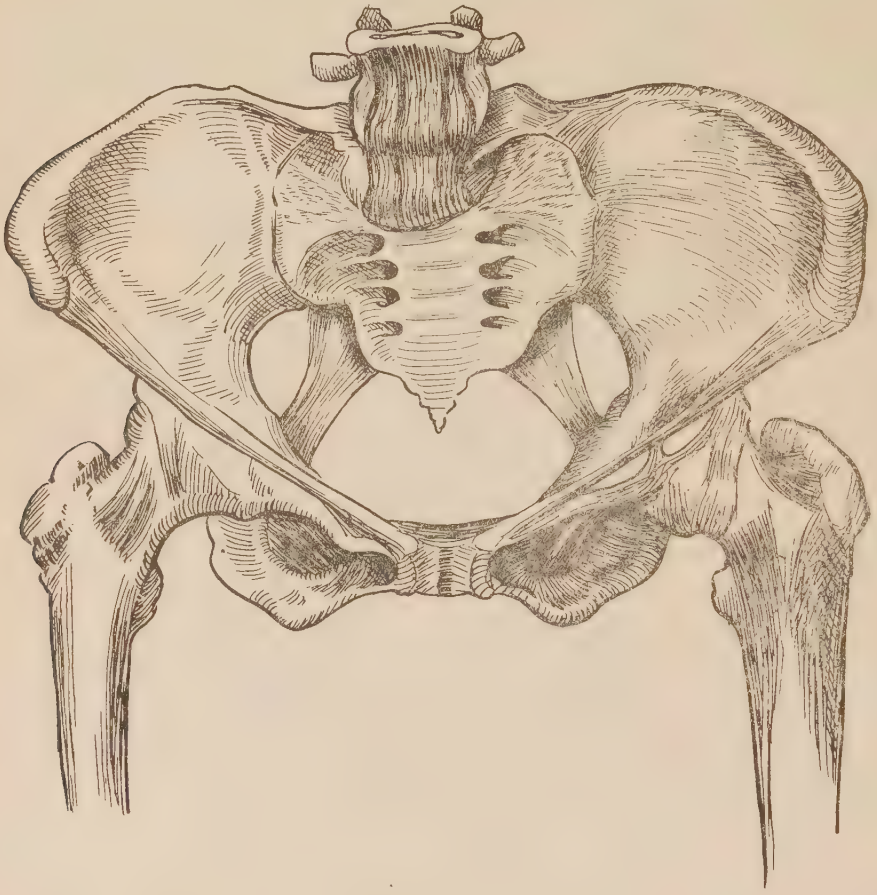

Fig. 104—Normal Female Pelvis. (De Lee)

The pelvis (Latin *pelvis,* a basin) is a strong bony ring supporting the spine and resting on the two lower extremities. It is composed of four bones: the two ossa innominata, which bound it on either side and in front, and the sacrum and coccyx which lie in the posterior wall.

The os innominatum is arbitrarily so called from its non-resemblance to any known object: it connects the thigh to the trunk. The broad expanded portion of the os innominatum which runs upward from the basin and forms the prominence of the hip is called the *ilium.*

The *ischium* is the inferior portion. It is the strongest part of the bone. It expands downward, forms a thick tuberosity (tuber ischii) which supports the body in its sitting posture. The ischium curves forward and forms with the descending ramus of the os pubis a large opening called the obturator foramen.

The os pubis lies in the anterior wall of the pelvis.

In the outer surface of the os innominatum is a deep circular depression called the cotyloid cavity or acetabulum. This receives the head of the femur. Forward from the acetabulum and slightly downward the os pubis extends until it meets its fellow in the median line, forming the rim of the true pelvis.

At the point where the two pubic bones meet the articulation is called the symphysis pubis.

It is an amphiarthrodial joint, formed by the junction of the two oval articular surfaces of the ossa pubis. The articulation of the two pubic bones is effected by five ligaments, (1) the anterior pubic ligament, (2) the posterior pubic ligament, (3) the superior pubic ligament, (4) the subpubic ligament, (5) the interpubic disc.

Symphysiotomy is the severing of the fibrocartilage of the symphysis pubis, in order to facilitate delivery by increasing the diameter of the pelvis. If the pubic bone is cut laterally from the median line the operation is called pubiotomy, hebotomy, or hebosteotomy.

In early life the ilium, ischium, and os pubis are separate bones: in adult life they become united. The final ossification of the cartilaginous joining takes place about the 25th year.

The sacrum is a wedge-shaped large bone situated in the lower part of the vertebral column, below the fifth lumbar vertebra. It forms the greater part of the posterior wall of the pelvis.

The coccyx is made up of four rudimentary vertebrae. It articulates with the apex of the sacrum. Its direction is downward and forward, constantly diminishing in size until it ends in a point, the lowest extremity of the vertebral column.

If an oblique plane be drawn from the upper border of the symphysis pubis to the upper part of the sacrum it will form the dividing line between the false and the true pelvis. The partition lying above this plane is the false pelvis. It is more properly a part of the hypogastric and iliac regions of the abdomen.

The true pelvis lying below this plane consists of a brim or inlet, a cavity, and an outlet. The true pelvic cavity may be likened to an obtuse elbow used in pipe-fitting. It will be thus seen that the true pelvis is a short curved canal considerably deeper on its posterior wall.

The structure and contour of the female pelvis differ from the male. The bones are smoother and slenderer; the acetabula or hip-sockets are wider apart; the female pelvis is wider and shallower; the span of the subpubic arch is wider.

The axis of the brim, that is a line drawn at right angles to middle of the plane of the inlet would at one extremity strike the umbilicus; at the other extremity, the middle of the coccyx. The axis of the outlet may be fixed by a line from the sacral promontory or upper margin of the sacrum to the center of the outlet. The axis of the cavity is curved symmetrically with the sacrococcygeal curve.

In an erect posture the brim of the true pelvis forms an angle of about 60 degrees with the plane on which we stand.

The lower circumference or outlet of the pelvis is in outline very irregular. It presents three prominences: the tuber ischii at each side, and the tip of the coccyx in the posterior median line.

The female pelvis is of greater capacity than the male. Anatomists give three diameters of the inlet, cavity and outlet. The present data are referred to the female pelvis.

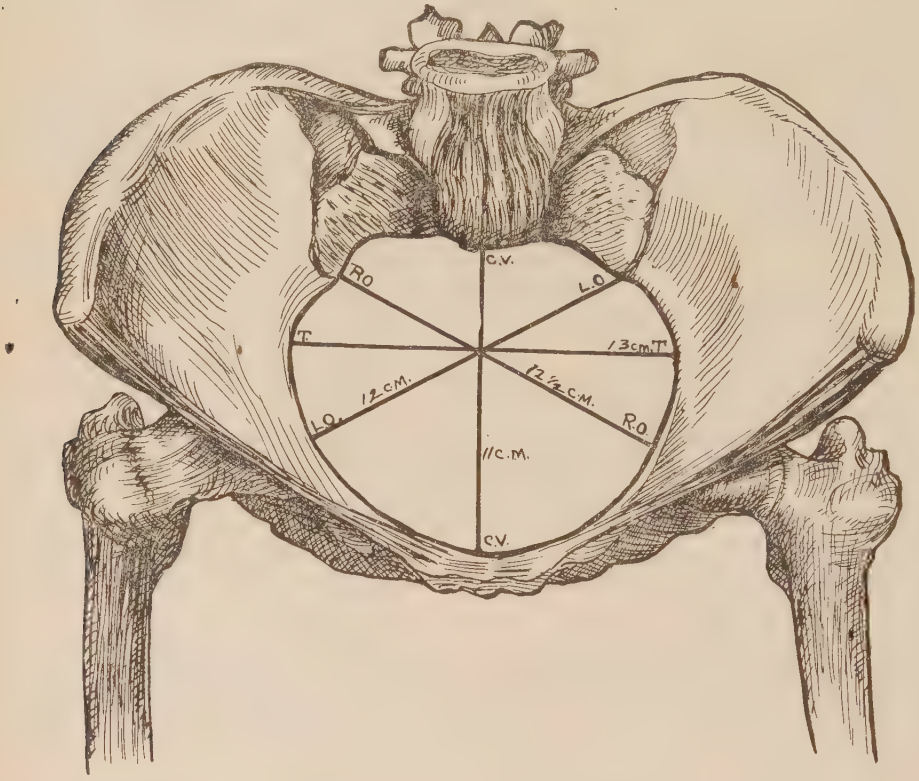

Fig. 105—Pelvic Inlet with Diameters. (De Lee)

The plane of the inlet is bounded in front by the upper border of the pubis; laterally by the curved inner surface of the innominate bones, called the linea innominata; dorsally by the sacral promontory. The antero-posterior diameter, called by von Roederer the conjugata vera, extends from the upper border of the pubis to the tip of the sacral promontory. This is the anatomic conjugate. It measures about 4.5 inches. If the line be dropped down a centimeter on the pubis the diameter is shortened about half a centimeter. This is called by some the obstetric diameter.

The transverse diameter drawn from a point on the lower margin of the acetabulum on one side to the corresponding point on the other is about 5¼ inches.

The oblique diameters designated as right oblique and left oblique extend from the center of the great sacro-sciatic foramen on one side to the center of the obturator membrane on the other. The average length is 5 inches.

These diameters vary in the estimation of a half-inch when drawn in the cavity and outlet. For our purpose the aforesaid data are sufficient.

The importance of the size and contour of the female pelvis is great. The foetus must pass through this curved cylindrical passage to reach the outer world. A contracted or malformed pelvis may hinder his passage. Even an abnormally large pelvis may cause dystocia. As a rule, however, the large pelvis facilitates delivery.

In labor the head descends straight into the pelvis until it reaches a plane formed by the apex of the pubic arch, the spines of the ischia and the tip of the sacrum. Then the foetus rotates and, as it were, bores through to the outer opening of the birth canal.

The usual attitude of the child as it passes through the parturient canal: the legs are flexed on the thighs; they are crossed over each other; the thighs are flexed and crossed upon the abdomen; the arms are folded on the chest; the head is flexed with the chin resting on the sternum.

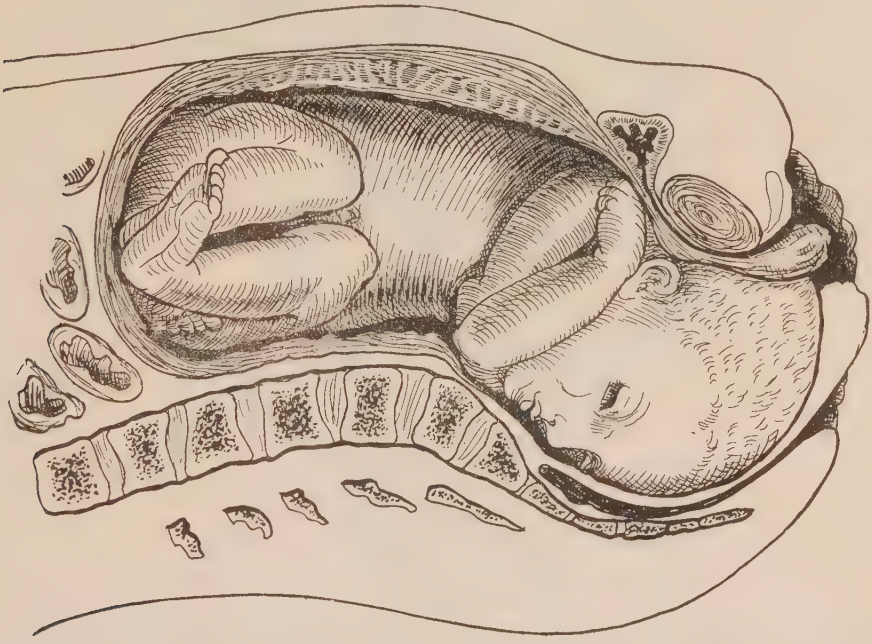

Fig. 106—Frozen Section of woman who died in 2nd Stage. (Barbour)

The pressure of labor is estimated at about 30 pounds. As this pressure forces the foetus down through the canal it molds the foetus to facilitate its passage. The molding is possible because of the softness of the bones. The sutures of the fetal head are loosely connected; the bones are soft. Therefore the head undergoes important changes. In ordinary head presentations the face and forehead are flattened; the occiput is elongated; the bones overlap at the sutures, permitting compression of the head. The head presents the form of a cylinder. These changes are accentuated in birth through a narrow pelvis. There may be slight cerebral hemorrhage.

Sometimes in long labors in a contracted pelvis venous congestion of blood forms in the foetus a tumour under the scalp. It is called *caput succedaneum*. Usually it is absorbed within 36 hours after labor. The asymmetry of the head produced by the mechanism of labor disappears by the end of a week.

Stadtfeld observed in some cases a permanent asymmetry due to labor.

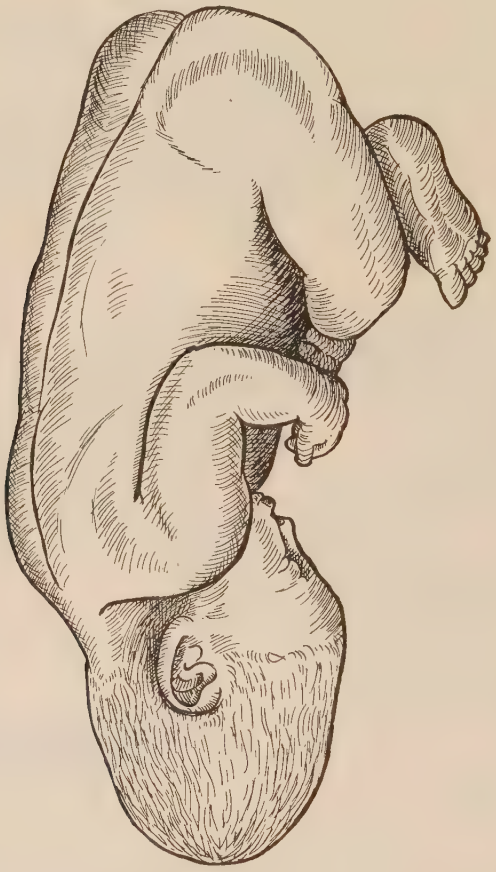

Fig. 107—Attitude of Child during Period of Expulsion. (De Lee)

Some of the asymmetry therefore observed by hatters in headtracing is due to the mechanism of labor. Of course deformities occur by abnormal labors and by the action of accoucheurs. In normal labor the pressure of the expulsive movements may bend the bones of the legs or of the shoulders, but this deformity usually rights itself within ten days.

Nature fits the fetal head for its passage through the birth canal and for the rapid development in the first year of life. The bones of the head are not united: they are held together by a membrane called the *chondrocranium*. This fibrous tissue is continuous externally with the periosteum, internally with the dura mater.

At the four angles of the parietal bones, the corners are round so that six spaces are left: these spaces are filled with membrane; they are called *fontanelles*. The ossifying process closes some of these spaces soon after birth; others are not ossified until the second year of childhood.

Fig. 108—Depressing Head for Delivery of Anterior Shoulder. (De Lee)

The largest diameter of the fetal head is about 5 inches. This is a line from the chin to the center of the convexity of the occiput. The shortest diameter is between the temporal bones, a little over 3 inches. The diameter from one parietal bone to another is about 3.7 inches, but owing to the direction in which the head presentation moves, the parietal protuberances or bosses meet the greatest resistance in passing through the canal.

The head is said to be engaged when the plane that passes through these parietal bosses has passed the region of the inlet.

The average greater circumference of the fetal head is somewhat more than 13 inches: its smaller circumference is 12 inches. The circumference of the shoulders is about 13 inches. They are more compressible

than the head. Moreover, one is delivered at a time, facilitating the passage. The delivery of the head is the most difficult part of labor. The diameter from the point of one shoulder to the point of the other is about 4½ inches, but this diameter is not presented to the diameter of the pelvis.

The *presentation* of the foetus is very important in obstetrics. By presentation is meant that part of the foetus which is felt by the examining finger introduced into the center of the pelvis. *Position* is the situation of the child in the pelvis.

Fig. 109—Delivery of Posterior Shoulder. (De Lee)

The foetus may present any part of its anatomy. Baudelocque (Jean Louis Baudelocque, French Obstetrician, 1746-1810) described 94 presentations. Both presentation and position may change during labor.

Three grand divisions of presentation are recognized:

1. Cephalic presentation. This is subdivided into vertex, bregmatic brow, and face presentation. The vertex presentation is the normal, and is found in over 95 per cent. of pregnancies. The other forms of cephalic presentation may rotate into vertex presentation or be thus adjusted by the accoucheur. Face presentation persisting occurs in about 0.6 per cent.

2. Pelvic or breech presentation occurs in about 3 per cent. of presentations.

3. Transverse presentation is found in less than 0.6 per cent. Any portion of the body may present itself.

The rotation of the foetus may be from right to left or from left to right.

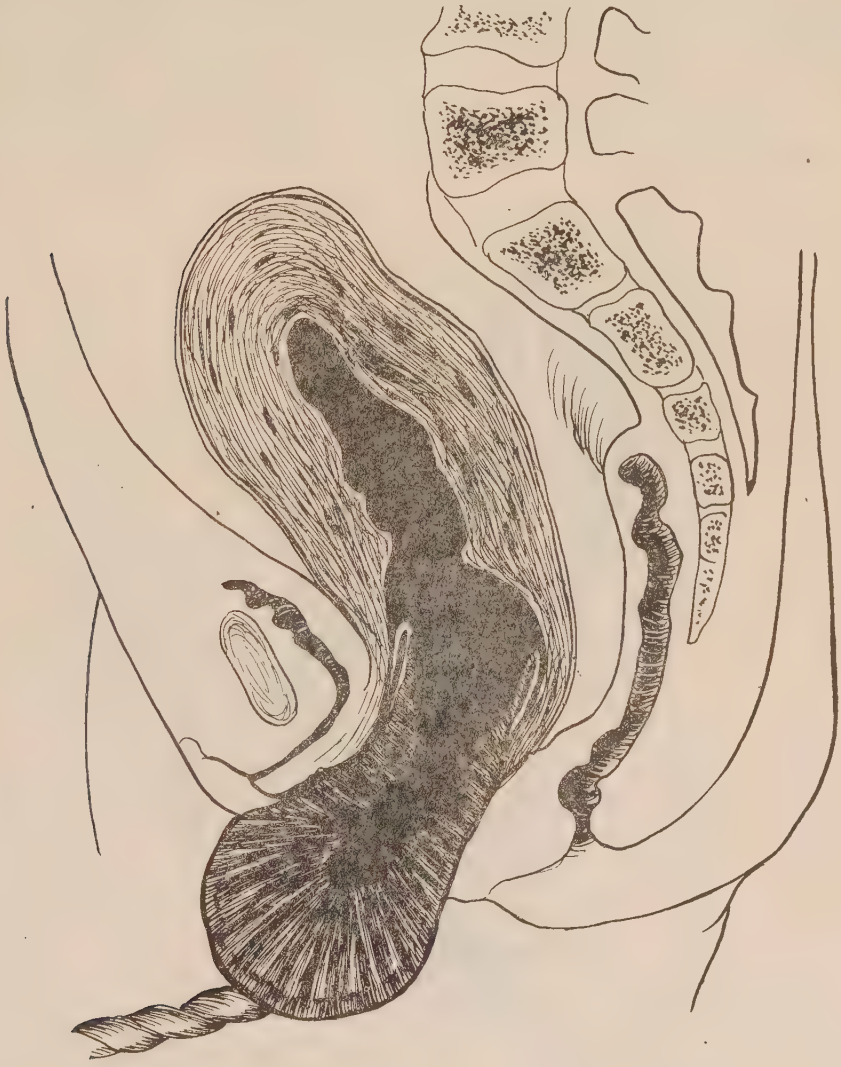

Fig. 110—Expulsion of Placenta—Schultze's Method. (De Lee)

The third stage of labor consists of two acts: the detachment of the placenta and its expulsion together with the membranes. The membranes consist of the amnion, the chorion, the decidua reflexa and portions of the decidua vera and of the serotina. "The decidua basalis or serotina is a portion of the decidua vera altered only by the superimposed growing ovum." (De Lee) The line of cleavage in the separation of the placenta lies in the decidua serotina: the compacta peels off from the spongiosa and

is expelled with the placenta. If the placenta or portions thereof adhere, the condition is pathologic, necessitating surgical removal.

As the placenta and membranes (the secundines or afterbirth) leave the uterus its surface is denuded of mucous lining. This denudation is deepest at the placental site, where its surface is peeled off almost to the muscular layer. Its entire inner surface is bleeding, more profusely at the placental site. Dangerous infection is thus liable.

The placenta may turn inside out like an umbrella reversed by a strong wind or it may slide down the side of the uterus and out through the vagina. The former is called Schultze's method; it is the usual process.

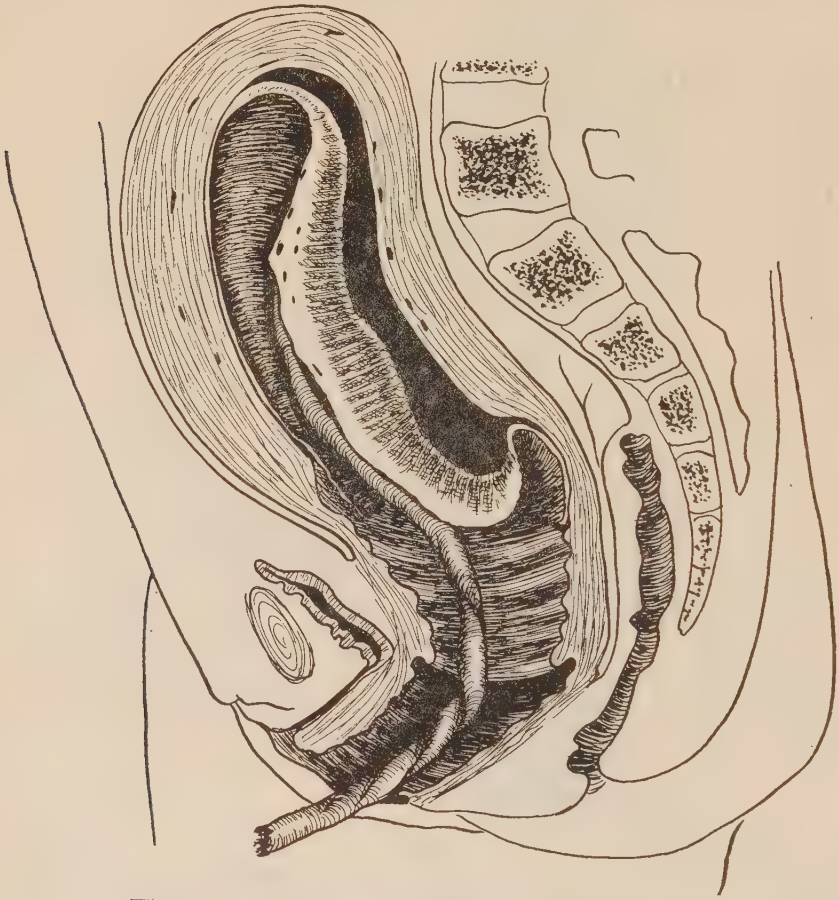

Fig. 111—Placenta Sliding Out. (De Lee)

De Lee declares that "more women die from accidents of the third stage of labor than during the other two combined." Principal among these accidents are postpartum hemorrhage and puerperal infection from unexpelled portions of the placenta. The placenta and membranes must be minutely examined to certify their complete expulsion. To assist this expulsion the bladder is emptied; the hand of the accoucheur gently pushes

down on the belly over the fundus of the womb in the axis of the inlet; the patient is asked to bear down; and if the membranes still adhere gentle steady traction without twisting should be employed.

Sometimes the separation of the placenta is retarded for even eight or ten hours. This is pathologic. If there be no excessive hemorrhage one may wait. In such cases Credé advises to press down on the uterus and at the same time squeeze it.

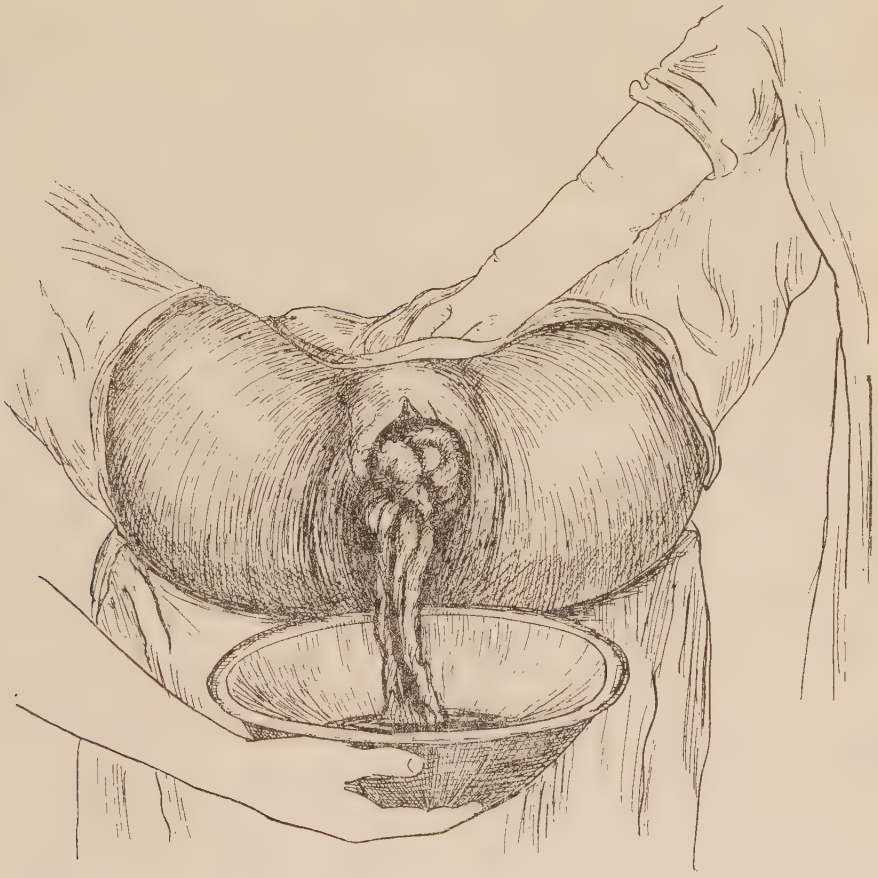

Fig. 112—Expressing Placenta. (De Lee)

Severe postpartum hemorrhage occurs in about 2 per cent. of labors; death from such cause should be very rare,—"one in 5000 deliveries." (De Lee). The hemorrhage may come from a tear: the remedy is obvious. If the hemorrhage be due to a slow contraction of the uterus, vigorous massage will usually cause cessation of the hemorrhage through contraction of the uterus.

Sometimes it is necessary to remove the adherent pieces of the placenta by the accoucheur's finger, Credé's method should be operated if possible because the manual removal of the placenta is dangerous: the mortality is ten per cent. If it must be employed all possible aseptic

measures should be employed. In bad cases of hemorrhage the uterus is douched with 120 degrees F. water with 0.5 per cent. lysol. Then a tamponade of sterile gauze may be necessary.

Sometimes late postpartum hemorrhages develop days or months after the delivery. They are due either to neglected lacerations or to bits of placenta which were not expelled. The treatment in the main is the same as the foregoing.

The conscientious skilful accoucheur examines repeatedly every portion of the maternal surface of the placenta. The cleavage surface should present a gray, smooth, glistening surface of the decidua serotina: a rough spot or torn edge indicates that a piece has remained in the parturient canal. The membranes also should be studied.

Everything that touches the parturient should be sterilized. Lysol and bichlorid solutions should be abundantly used. The child is born "inter faeces et urinas."

When the head of the child is born its eyelids and face are wiped with a sponge or cloth moistened with a 1 :1500 bichlorid of mercury solution. The mucus is squeezed out of the nostrils and wiped out of the mouth with the finger covered with a piece of sterilized clean cloth.

Attention must be given to the cord: it may be wound around the child's neck. In such case it must be unwound to prevent strangulation. A too short cord is cut before the completion of the delivery.

In normal deliveries the accoucheur waits for the pulsation to cease in the cord.

The cord is then ligated ½ inch from the skin margin of the child's navel. Another ligature is made about two inches from the first: between these two ligatures the cord is severed with a sterile scissors or other instrument. The tying must be secure: the stump of the child's umbilicus should not be more than ½ inch.

The accoucheur waits a few minutes for the pulsations in the cord to cease, because during that time the placental circulation is flowing into the foetus and supplying him with blood necessary until his extrauterine circulation is set up.

The end of the cord protruding from the mother is tied to keep the blood in the placenta and thus facilitate the contraction of the uterus, and also to provide for a possible twin that may be using the same circulation.

The stump and belly of the new-born babe are wiped with the aforesaid solution of bichlorid or pure alcohol; a piece of dry gauze is laid over the stump; the child is wrapped in a sterile napkin; a drop of 2 per cent. silver nitrate solution (Credé) neutralized by an immediate salt solution, or 1 per cent. nitrate of silver solution without neutralization, or 5 per cent. sophol solution, or from 10 to 20 per cent. solution of argyrol, is dropped into each eye, and the infant unbathed is laid in a warm place.

De Lee advises the reduction of Credé's formula to 1 per cent. silver nitrate to prevent "silver catarrh." Undoubtedly when gonorrhea is suspected the 2 per cent. solution should be used.

This care of the eyes is necessary to prevent ophthalmia neonatorum. In some states it is compulsory.

Soon after birth the child's whole body is anointed with warm olive oil, or warm albolene, or warm lard mixed with benzoinol to dissolve the vernix caseosa. After the vernix is dissolved the child's body is wiped with a sterile soft towel. No bath should be given. A full bath should not be given until the cord is off and the navel healed. The head and face are sponged daily in this interval with lukewarm water; the buttocks are similarly kept clean. In cold weather the body is best cleansed by the unguents aforementioned: in hot weather warm water may be substituted. As a rule dusting-powders are not necessary: if chafing develops, a powder of stearate of zinc is best. The stump of the cord is dressed when wet or soiled. A solution of 1 :2000 bichlorid or pure alcohol is the best wash. The outside of the eyelids are washed with clean warm water into which a little common salt has been thrown. The temperature of the room in which the baby receives care should not be less than 85 degrees F. Plenty of fresh air should be admitted.

It is better to allow the baby to lie quietly in a warm place (on his right side) for twelve hours or more anointed with oil as aforesaid.

The tying of the cord should be secure to prevent hemorrhage. Frequent inspection of the stump should be made.

Portions of Wharton's jelly may be imprisoned in the tying of the cord and cause hemorrhage. A second ligature may be necessary.

Soap should be used sparingly or not at all: never use cheap soap.

If the vernix caseosa is not easily removed by the first anointing, no friction should be used. The baby should again be anointed and thus until the body is free of the vernix.

When the baby is bathed the water should be 100 degrees.

A drachm of borax to a quart of water will soften well-water.

The genitals should be daily sponged by gentle sponging. The folds of the female labia should be gently separated and the excretions cleansed. No soap should be used.

The chest-wall of the new-born babe is undeveloped: the breathing at first is irregular, intermittent, abdominal. Sometimes at birth the lungs of the neonatus must be stimulated to function.

On Nov. 30, 1925, at Milwaukee, Wis., a baby boy was born to Mr. and Mrs. Christ Richter. The baby seemed to have died during birth. The police pulmotor was applied for one hour and thirty-five minutes. The child was resuscitated, and is a normal healthy infant.

Usually the development of the function of the lungs and of the circulatory system proceeds naturally and rapidly. The exchange of gases in the child's lungs is more than double that of the adult. Crying is beneficial if not too violent: it develops the lungs. The pulse of a normal neonatus ranges from 150 to 190. During the first year it will range from 110 to 130.

Shortly after birth the fecal accumulation called meconium is discharged. It is normally a green, thick, pasty excretion. It should all be discharged on the third or fourth day. The colostrum of the mother's breasts has a laxative effect. Normally the infant has two or three stools daily.

Beginning about the seventh day after birth the prepuce of male infants should gently be retracted a little every day until the glans is exposed. These partial retractions will usually expose the gland in three or four days. Thereafter daily all smegma should be removed with clean absorbent cotton and a weak solution of boric acid in cool water. This process should be continued until the boy is able thus to care for himself. Plain cold water is all that is needed for the boy who bathes himself. A little sterile vaseline applied to the gland will prevent readhesion of the prepuce. If the adhesion of the prepuce be unduly firm it may demand circumcision. Cases of firm adhesion should be reported to the surgeon. It is a simple operation to "strip" the gland of an infant. Early circumcision is indicated in all cases in which eventually it will be necessary. Forcible retraction of the prepuce by the surgeon is preferable to circumcision in cases wherein the prepuce is not unduly long.

In female infants it is very rare that the hood of the clitoris adheres or that the labia are so firmly adherent as to demand surgery.

De Lee recommends ten drops of castor oil on the day after the day of birth. This evacuates the meconium. It may be repeated as the need is manifested. The intestinal tract must be kept in order. An enema with a mild salt solution may occasionally be given with a soft rubber catheter. If there be no phimosis or atresia, urination usually proceeds regularly. Any serious disorder demands the surgeon.

From eight to twelve hours after birth the child is put to the breast. It may require patient skill to induce the child to suck. For the first few days an ounce of water and the colostrum of the mother's breasts are sufficient.

Ahlfeld recommends two nursings on the first day; the quantity would be only a few drops. On the second day the child should nurse five times: total average drunk, 4½ oz. From this point onward he recommends 6 or 7 nursings per diem. The total quantity of milk drunk by the infant increases rapidly up to the eighth day, on which it averages 23 oz.

Sunlight and Growth.—Sunlight is a most important factor in the life of a growing child, especially a baby. Although this has been known in a general way for a long time, it has not been given sufficient attention until recent years, during which knowledge of the effect of sunlight on the growth of children has become more specific.

Normal growth of bone is dependent not only on the food that the child eats but also upon the direct sunlight that he receives, for the sunlight provides the body with the power to utilize the food. If a baby is constantly deprived of a direct sunlight his bones will not develop normally, his muscles will be flabby, and his skin will be pale. He will probably have rickets.

Rickets Caused by Lack of Sunlight.—Rickets is a disease of growth, affecting the whole body, but most strikingly the bones. In hot climates, where children are outdoors in the sun throughout the year, rickets is little known; in temperate climates, where children are indoors a large part of the year, rickets is prevalent. Since rickets is a disease resulting primarily from lack of sunlight it can be prevented or cured by sunlight.

To ward off rickets preventive measures must be begun very early in an infant's life, for rickets makes its appearance in very young infants. These preventive measures are the giving of sun baths and the administering of cod-liver oil, the so-called "bottled sunshine."

Window Glass Bars Ultra-Violet Rays.—When the sun's rays are analyzed by a physicist it is found that some of them produce light that when passed through a prism divides into the well-known spectrum of colors—red, orange, yellow, green, blue, and violet. Beyond each end of this visible spectrum are invisible rays, at one end the infrared rays that produce heat, and at the other end the beneficial ultra-violet rays that have a powerful effect on living matter—destroying bacteria and healing tuberculosis and rickets.

Tuberculosis germs placed in open air devoid of sunlight died in about six hours. In open air with sunlight, they died in two hours.

When sunlight passes through window glass the visible rays and the heat rays pass through, but the ultra-violet rays do not. In the same way heat rays may penetrate clothing but ultra-violet rays do not.

Spring and Summer Sun Most Beneficial.—The ultra-violet light coming from the sun to the earth varies in its intensity with the seasons. This variation probably depends on the distance the rays have traveled through the atmosphere to reach the earth. The greater the distance the rays travel the less intense is the ultra-violet light that reaches the earth.

To reach the North Temperate Zone the rays must travel a much greater distance in winter when the sun is in the south than in summer when it is in the north. When the sun's rays reach the earth at nearly a right angle to the earth's surface, in May, June, and July, the ultra-violet content of the sunlight is at its height, and when the rays are oblique, in the winter months, it is lowest.

Give sun baths all the year around!

Sunlight Good for Baby.—It has long been a tradition that babies are delicate and must be carefully protected from direct sunlight. When a baby was put outdoors he was bundled up in many clothes and wraps, and the hood of the baby carriage was pulled up to keep out every ray of sunlight. The carriage might be placed in the sun, but the ultra-violet rays could not penetrate the hood and the clothes to reach the baby.

It has also been believed that a baby's eyes are weak and sensitive to light. The sun does not cause inflammation, however, when the baby's eyes are closed or when his head is turned so that the eyes are not in the direct line of the rays.

Traditions such as these, handed down from generation to generation, are founded on hearsay, not on fact.

Direct Rays Essential.—The beneficial effect of sunlight is not obtained unless the rays reach the skin directly. The interposition of clothing or window glass keeps out the ultra-violet rays. It is only when the skin begins to be tanned that any benefit may be expected.

Sun baths in the direct sunlight are the simplest method of giving the baby enough ultra-violet light. An older child, who has learned to walk,

naturally seeks the sunny part of the playground, but a baby is dependent on others to put him in the sun.

Put the baby in the sun!

Give Sun Baths Early.—In the North Temperate Zone it is usually possible for normal babies to begin to have outdoor sun baths by the middle of March or the first of April, provided that the place selected for the sun bath is protected from the wind.

Sun baths should be begun when the baby is about 3 or 4 weeks old. A baby born in the spring or summer, therefore, can have outdoor sun baths earlier than a fall or winter baby. The exact date when sun baths may be begun varies with the latitude and the weather.

Beginning the Sun Bath.—On the first sunny day in early spring the baby may be put in the direct sunlight with the hood of the carriage and the baby's cap pushed well back so that the sun will shine directly on his cheeks. He should be turned first on one side and then on the other so that both cheeks will be exposed to the sun and yet the eyes will be kept away from the direct rays. On this first day the baby's hands should be exposed to the direct sun for a few minutes. Care must be taken not to burn the skin.

A slight reddening of the skin each day will gradually bring about pigmentation or tanning. Unless the baby is accustomed to the sunlight through exposure at an open window the first outdoor sun bath should be for 10 or 15 minutes only. Each day thereafter the exposure to the sun should be increased by 3 to 5 minutes.

Every few days the amount of body surface should be increased, at first slowly, but as the days grow warmer, more rapidly.

Get the baby used to sunlight!

Baby Should Have a Coat of Tan.—After the face and hands are used to the sun the arms may be bared, at first one at a time, later both together. Gradually the baby gets used to the sun, and by the middle of May or the first of June sun baths may be given the whole body. When the face, arms, and legs are tanned the shirt should be taken off for a short time daily, and finally the band and diaper. The sun baths may be lengthened until the baby lies in the sun an hour in the morning and an hour in the afternoon. In July and August sun baths should be given before 11 a. m. and after 3 p. m. On very hot days the baby should not be given sun baths between these hours. If he is outdoors at that time his head should be protected. The face and hands should be well tanned by the middle of April, the arms and legs by the middle of May, and the whole body in June. A good tan is evidence that the ultra-violet rays are being effective.

Winter Babies Need Sunlight.—In cold parts of the temperate zones extensive outdoor sun baths can not be given between the middle of November and the middle of March. However, on bright winter days the baby can be put outdoors to get whatever sunlight there is. Many mothers think that in cold weather a baby may not be put outdoors, not realizing that in the sun the thermometer may register 40 or 50 degrees more than

in the shade. If the baby is protected from wind the sun will keep him warm.

Give sun baths in winter!

Indoor Sun Baths at Open Window.—A sun bath can be given indoors at a window opened at top or bottom, the baby being placed in the patch of sunlight coming through the open space. It is thus possible to produce tanning. If the room is heated the baby need not be wrapped up warmly. It may not be possible to expose the whole body to the sun; but the face, hands, and legs can be exposed daily for increasing periods. The periods of exposure should be longer than the summer outdoor periods, and they should be between 10 a. m. and 1 p. m., when the rays are most intense.

Winter and fall babies need long sun baths, as they are more likely to develop severe rickets than those born in the spring and summer. If a baby is used to indoor sun baths he can be started on outdoor ones by the first of March, or even earlier, depending on the climate and the weather.

Cod-Liver Oil Is "Bottled Sunshine".—In the temperate zones sunlight must be supplemented with cod-liver oil, especially in fall and winter. X-ray studies have shown that either sunlight or cod-liver oil, or better, both together would cure rickets or prevent it.

Rickets affects about 90 per cent. of the babies in the North Temperate Zone. Even though a baby is born in the spring and receives sun baths throughout his first summer he should also be given cod-liver oil. A winter baby can not get enough outdoor sunshine, so he especially needs cod-liver oil. It should be given to every baby throughout the first two years of life, beginning at 2 weeks of age, whether he is breast fed or artificially fed.

Daily amounts of cod-liver oil:

2 to 6 weeks, ½ teaspoonful twice a day.

6 weeks to 3 months, 1 teaspoonful twice a day.

3 to 4 months, 1½ teaspoonfuls twice a day.

4 months to 2 years, 1½ to 2 teaspoonfuls twice a day.

Give sun bath and cod-liver oil daily!

How to Give Cod-Liver Oil to Baby.—With the baby on your lap, pour the cod-liver oil into a spoon held in your right hand. With your left hand open the baby's mouth by pressing his cheeks together between your thumb and fingers. Pour the oil little by little into his mouth. If his mouth is not held open until the oil is entirely swallowed he will spit out what is left in his mouth. It is rare for a baby actually to vomit oil. Cod-liver oil will not upset a baby's digestion. Older babies may be given orange juice with the cod-liver oil, or after it. It is best, however, to teach them to take it directly, unmixed with anything else.

Sun Baths for Older Children.—Though sun baths are of primary importance for the baby they are also of great value for the "runabout" and the preschool child. Sun bathing is more important for the child than sea bathing, and it is accessible everywhere in spring and summer. Clothing for sun baths should be low in the neck, short in the legs, and without sleeves. An ordinary bathing suit or bathing trunks, a sleeveless slip, or a set of cotton underwear may be worn.

Sun baths may be given in the fields, in a city back yard, on a roof, or on a porch, as well as on a beach. Care must be taken not to let the child's skin become sunburned severely. The best time for sun baths is the morning.

Tanning is the goal for which to strive, and the process must be gradual. The exposure should begin with the face and arms and increase slowly in duration and in the extent of body surface exposed, until the whole body is exposed for two hours a day.

Sunlight and cod-liver oil prevent rickets!

Milk Is Both Meat and Drink.—Milk is not merely a palatable drink, but our most important food.

Not all kinds of food can make new tissue—bone, teeth, brain, or muscle. Milk is a unique food since it furnishes some of all the material necessary for growth and it also supplies energy for work and play and warmth. The need for all tissue-building material is greatest during the period of most rapid growth.

Milk is an indispensable part of the diet of mothers who are carrying or nursing babies and of young children. So long as a child is growing, milk should be included in the diet. A pint and a half a day is a safe allowance of milk for an average child. Pregnant or nursing mothers, infants after their first year, and many children need a quart of milk a day.

No matter is what form it is taken, milk is a valuable food.

Milk products such as skim milk, buttermilk, and cottage cheese contain the protein, but lack most of the butterfat and some of the vitamins of whole milk.

Butter is an easily digested form of fat and contains large amounts of growth-stimulating vitamins. Children who are receiving whole milk and plenty of green vegetables can get along without butter, but if they are given skim milk they should be given butter also.

Milk for Protein.—In our food there is a substance called protein which is necessary for growth. Milk can furnish all the protein the body needs. The infant receives his protein entirely from milk, and the adult should get a large share of his protein from some form of milk—whole or skim milk, buttermilk, clabber, or cottage cheese, which is the curded protein separated out of milk.

Not all proteins are of equal value for tissue building. Eggs, meat, and fish are among the few foods that contain the same sort of high-grade or adequate protein as milk. Cereals and vegetables can not alone supply enough of this quality of protein.

Milk is the cheapest source of adequate protein.

Milk furnishes not only the best but the cheapest body-building material. A quart of milk supplies as much protein as 7 ounces of sirloin steak or 4 large eggs.

The younger the child the greater the importance of growth foods.

Milk protein is good for everybody, but children need an abundance of it. Every year growing children should add to their weight in new bone, blood, and muscle from 5 to 15 pounds, according to their age.

Milk for Minerals.—The body is not built of protein alone, but requires a variety of mineral substances. The pregnant or nursing mother and the growing child must have an abundance of minerals in their diets or the child may show this deficiency by stunted growth, weak bones, or poor teeth. Special care must be taken to select foods rich in lime, phosphorus, and iron.

Milk is our best and cheapest source of lime.

Our bones and teeth are made largely of lime, which is a form of calcium. Lime is also a necessary part of the blood and of all body organs. One quart of milk will furnish as much calcium as 10 large oranges, 10 large helpings of cauliflower, 24 large helpings of carrots, 32 eggs, or 20 pounds of beef.

Milk is a valuable source of phosphorus. Whole cereals, eggs, meat, and fish are the best foods for furnishing additional phosphorus.

How to Supplement Milk for Iron.—Milk supplies some iron, but not enough. Leafy vegetables (such as spinach), egg yolk, and beef supplement milk in regard to iron and can be used even for the infant.

Milk builds blood and bone and teeth!

Milk for Vitamins.—The body must be provided with certain essential substances called vitamins, if health and normal development are to be assured. When a diet is lacking wholly or partly in any one of the vitamins a special disease may develop, but long before this happens the child loses appetite, is ailing, ceases to grow normally, and is weakened in resistance to infectious disease.

All known vitamins are found in fresh milk.

Whole milk, cream, and butter are the most important and most economical source of one of the vitamins. Other sources are egg yolk, liver, leafy vegetables, and cod-liver oil.

Another vitamin affects tooth and bone formation. Egg yolk and milk fat furnish some of this vitamin, but its most abundant source is such fish fats as cod-liver oil.

Two other vitamins are found in the breast milk of healthy mothers and in fresh milk from properly fed cows, but one or possibly both may be lacking in poor, stale, or heated milk. Fresh fruits and green vegetables are the best sources of these two vitamins.

Vitamins for the Infant.—Every baby, particularly if not breast fed, should receive daily the juice of some acid fruit, such as orange or tomato. In winter, when it is impossible to be daily in the direct sunshine outdoors for any considerable period, all infants, whether nursed or artificially fed, should be given cod-liver oil. Breast milk may be deficient in vitamins if the mother is improperly fed.

How to Use Milk.—*Whole milk* is the best form of milk for the child, because all parts of milk—fat, sugar, protein, minerals, and vitamins—are necessary for growth. Children properly trained from infancy will drink milk at every meal. Most dislike for milk has been suggested to children by the parents' distaste for it.

Milk may be used in cocoa, soup, eggnog, white sauce, milk gravy, creamed dishes, milk puddings, sherbets, and ice cream.

A Well-rounded Generous Diet for the Child.—Milk is an indispensable food for the child, but it should not be used as the only food after the early months of infancy.

Milk needs supplementing to supply certain minerals and vitamins and after the early months of life for energy and roughage. Because certain vitamins may be injured in cooking, fruit juices in infancy and later fruit and such vegetables as shredded lettuce, celery, carrots, or cabbage should be given raw to every child daily. Meat, fish, or eggs make the diet more palatable and enrich the food with protein, as well as minerals and vitamins.

Besides growth food, children need a great deal of energy food, which means plenty of bread and cereal and potato, and some sugar and fat. Starchy foods can not build up the engine, but they do furnish steam.

Give children plenty of plain food!

What Milk to Buy.—The best milk obtainable should be purchased, either a good grade of fresh liquid milk or milk powder.

Liquid Milk.—Raw milk is safe only when the utmost precautions are taken in the production and handling of it and when it is relatively fresh, as it is a perishable food, dangerous unless properly safeguarded. It must be taken from healthy animals, chilled immediately, kept clean, cold, and covered, and handled carefully throughout by persons free from disease. In cities and towns it is wiser to use pasteurized milk than raw milk, unless the raw milk is certified. It should be purchased from a reliable dairy.

Milk Powder.—Dried milk is made by removing the water from fresh whole milk, or partially skimmed or skim milk. So far as it is known, dry milk has the same nutritive value as the milk used in its preparation. Milk powder is the safest form of canned milk and the easiest to use. Children should be given *whole* milk, whether fresh or canned, except in abnormal states it be contraindicated.

Use more milk for children!

A child should never be cramped in his bed. The bed should be long enough to permit the child to lie straight, and to stretch his body at will. Curvature of the spine has resulted from a cramped attitude in bed. Such cramped situs also deranges the circulation of the blood.

Anemic infants and children may profitably be fed liver, or be given liver extract. The administration of liver as a blood tonic is yet in the experimental stage. The extracts are being purified in research laboratories. Scientists report that the most concentrated extract, in a fortnight produced about four times its weight of erythrocytes, or red corpuscles.

A discovery which is claimed makes available a new food factor was announced Feb. 6, 1928. Results of the study of vitamin D and vitamin A were made public in the annual report of the British medical research council.

Vitamin A, which was formerly confused with vitamin D, is stated to be quite distinct from it. Cod-liver oil up to now had been regarded as the substance richest in this vitamin, but research has shown, the report says, that liver fats of cattle and sheep yield 10 times as much of vitamin A as cod-liver oil. These fats are entirely free from the unpleasant flavor of fish oils.

Vitamin D, a mysterious and vital factor essential to health and until lately obtained only as a product of living substance, is now stated to be producible by the action of ultra-violet rays upon a chemical substance called sterol. It is claimed that thus this vitamin is obtainable cheap and in a form called ergosterol can be added to foods, greatly improving their nutritive qualities.

In 1920 the New York Department of Health issued the following excellent suggestions:

"Don't kiss the baby on the mouth or allow friends to do so.

"Don't give soothing sirups to the cross baby.

"Don't give patent cough mixtures for a cough.

"Don't fail to wash bottle and nipple before feeding baby.

"Don't fail, after feeding baby, to wash bottle and nipple. Don't let the milk bottle stand about, off the ice.

"Don't fail to keep the baby's food, when prepared, on the ice.

"Don't fail to feed baby at regular periods, day and night.

"Don't let the baby use a pacifier. Constant sucking of a dummy teat causes deformities and interferes with baby's growth.

"Don't excite the baby—especially before sleeping time or after eating.

"Don't rock the baby to sleep.

"Don't let any one sleep with the baby.

"Don't let the baby sleep in the sun with light shining into its eyes.

"Don't overdress the baby, and in summer avoid wool near skin.

"Don't pick up young babies without supporting the back.

"Don't neglect to bathe the baby daily. In summer frequent wet dips help.

"Don't fail to clean all folds of the skin. Don't let a wet bib or wet cap string chafe baby's neck.

"Don't keep baby in the house. Fresh air is necessary for growth.

"Don't permit flies to bother baby when sleeping. Use a net.

"Don't fail to screen windows, particularly in the nursery, against flies and insects.

"Don't forget that babies nursed by mother's milk, and given plenty of fresh air, have three times the advantage over others in escaping diarrhoea, pneumonia and children's infections.

"Don't expect a quiet, composed, healthy baby unless you do your part thoroughly and constantly."

Sleep.—A very young baby should sleep from 18 to 22 hours out of 24; during the second and third months from 18 to 20 hours. When he is 6 months old he should sleep 12 hours at night without interruption, save possibly for one evening feeding. At this age he will probably sleep 2 hours, both morning and afternoon, but should not sleep after 3 o'clock, in order that he may be ready to go to bed at 6 o'clock in the evening. The long period of night sleeping should be continued throughout childhood, but the daytime naps may be gradually shortened. At 1 year of age the baby may require one long and one short nap during the day. In the second year the two naps are merged into one, which may continue from

one to two hours in the middle of the day. Even if the child does not sleep all this time, the habit of resting in a quiet room is of great value. He should be provided with the best possible sleeping accommodations, so that the hours of sleep may be of the greatest value. He should always sleep in a bed by himself, and whenever possible in a room by himself, where he need not be disturbed by the presence of other persons, and where light, warmth, and ventilation may be adjusted to his particular needs. Not a few young babies have been smothered while lying in bed with an older person, some part of whose body was thrown over the baby's face during heavy sleep.

Never give baby any sort of medicine to induce sleep. All soothing sirups or other similar preparations contain drugs that are bad for the baby, and many of them are exceedingly dangerous. Many babies die every year from being given such medicines. The baby should never be allowed to go to sleep with anything in the nature of a pacifier in his mouth.

To promote comfortable sleep in warm weather the baby should be very lightly dressed, wearing nothing in addition to his sleeping bag save a thin nightgown, diaper, and gauze band after the first three months. Very young or delicate babies may need the shirt also, but this should be of the lightest weight. The room should be made as cool as possible. Outdoor sleeping is highly desirable for all babies when they can be protected from flies and mosquitoes, sufficiently shielded from rain or wind, and protected in case of a sudden drop in the temperature.

A baby should be trained from the beginning to have the longest period of unbroken sleep at night. Some babies get a wrong start in this respect and make great trouble by turning night into day. A strong argument in favor of the long interval between feedings is that it largely does away with the need for waking the baby to nurse. Nature intends that the baby shall waken when hungry, and this normally occurs about once in 3 or 4 hours in a young healthy baby, so that with a little care the regular feeding interval can be made to coincide with the normal periods of waking. If the baby is still sound asleep when the time for nursing has come, he should be gently roused and put to breast. This will involve little shock to his nerves, because he will be about ready to waken in any event.

A mother who must prepare and serve the evening meal of the family will find it a great comfort to give the baby his supper at half past 5 and have him in his crib at 6. For the first few months he will be fed again at 10 o'clock, but after that he should not be taken up. He must be made comfortable in every way, the light should be put out, the window opened, his covers adapted to the temperature, but after the mother has assured herself that everything essential to his comfort has been attended to, if he is a perfectly healthy baby, she should not go to him when he cries.

Disturbed Sleep.—If the baby sleeps lightly, wakens often, and seems uncomfortable, he may be nervous from having been tickled, played with, or tossed about in the latter part of the day. Overstimulation is to be avoided at all times, no matter what its source nor what the age of the

baby. It is possible that he is too warm, too cold, or wet; there may be something scratching him, of there may be wrinkles in the bed clothing; he may be lying in a cramped position, or the band or diaper may be too tight, or more likely, he has been overfed, or has had something unsuitable to eat, or is hungry or thirsty.

Fig. 113—Lower Jaw.

1. First incisor, 6 to 9 months.
2. Second incisor, 12 to 15 months.
3. Canine or "stomach," 18 to 24 mos.
4. First molar, 12 to 15 months.
5. Second molar, 24 to 30 months.

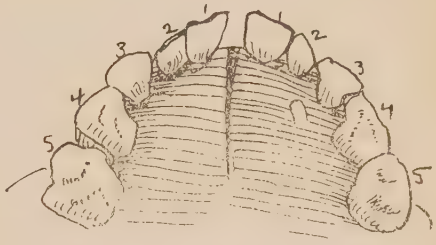

Fig. 114—Upper Jaw.

1. First incisor, 8 to 12 months.
2. Second incisor, 8 to 12 months.
3. Canine or "eye," 18 to 24 months.
4. First molar, 15 months.
5. Second molar, 24 to 30 months.

Deciduous or "Milk" Teeth.—The above illustrations, with the appended notes, show the position of the teeth in the mouth, their names, and the approximate times of their appearance. There are 20 of the milk teeth, 5 in each half jaw. The teeth appear in groups. There are five of these groups, with intervals between their appearance. After the first group there is a pause of five to eight weeks; after the second, a pause of one to three months; after the third, one of from two to three months; after the fourth, one of from two to four months. Thus, by the time a baby is 1 year old it may have 6 teeth; at 1½ years there should be 12; at 2 years, 16 teeth; and at 2½ years the entire set should be cut. There is considerable variation, both as to the order in which they appear and in the time, so that the mother need not be alarmed if her baby does not follow the average as above stated, but if he has no teeth at the end of the first year he can hardly be said to be developing properly. Probably the diet is at fault, or some disease is retarding growth. In such a case the doctor should be consulted. Racial and family traits account for some of the differences.

This set of teeth is replaced by the permanent set, beginning about the sixth year. A child should be taken to the dentist for examination of the first teeth. It sometimes happens that the milk teeth are so firm they do not fall out, but remaining in the jaws, crowd back the second set and cause them to come in misshapen and irregular.

Toys.—Since a baby wants to put everything in his mouth, his toys must be those that can safely be used in this way. They should be washable and should have no sharp points nor corners to hurt the eyes. Painted articles and hairy and wooly toys are unsafe, as are also objects small

enough to be swallowed, and those having loose parts, such as bells and the like.

Rubber toys, which may be washed, are excellent for a baby. Floating toys of celluloid are of great interest, but the baby will bite them to pieces unless he is watched.

A child should never have so many toys at one time as to distract his interest. He will be quite satisfied with a few things, and a handful of clothespins, for example, will often please just as much as an expensive doll or other toy. It is an excellent plan to have a box or basket in which to keep empty spools and other household objects which will amuse the baby.

It frequently happens that a young mother has so much advice from earnest and entirely well-meaning friends that she is bewildered, especially when one person's directions conflict with those of another. In some cases, of course, this advice may be of the wisest and best; but in all cases she should have some standards of her own against which to measure what she is told. Her physician and nurse should be her first guides; later, in addition, she should have at least one book of recognized value to consult when she is in doubt.

The Children's Bureau of the United States Department of Labor and the National Health Council, at nominal prices, issue reliable scientific booklets covering every phase of infant life.

Outdoor Life.—Keep the baby out of doors. Except in winter, begin when he is 2 weeks old to take him out for a few minutes every day in mild pleasant weather, increasing the time gradually until he is staying out most of the time. Hardly anything will do more to insure a healthy babyhood than this, and the result will well repay whatever trouble is necessary to secure it. With the exceptions mentioned below, a baby may spend practically all the time out of doors, both sleeping and waking, if there is some one to look after him to see that he is protected against the wind, extremes of temperature, storms, dangerous insects, and accidents. A young baby may stay in his carriage or crib on the porch, on the roof, under the trees, or in the back yard, where the busy mother can look after him; older babies who need exercise may be kept in a creeping pen either on the porch or in the yard, If it is not feasible to provide outdoor sleeping places, at least the windows of the nursery should be kept wide open most of the year.

When not to take baby out.—No baby should go out in below-zero weather. When the temperature is lower than 20 degrees above zero (except during the height of the bright days), or when there is a heavy storm in progress or a high wind blowing quantities of dust about; it is best to give the baby his airing indoors or on a protected porch. Dress him as for going out, open all the windows wide, and let him remain in the fresh air for some time. Very young or delicate babies require much warmth and must be well covered to protect them from chill. A baby under 3 months of age should not be taken out in severe weather.

When it is excessively hot the baby should be taken out early in the day, then kept indoors during the hottest part of the day.

Exercise.—The normal baby exercises his body constantly. The young baby throws his arms and legs about quite aimlessly; he closes and uncloses his hands; and stretches and twists his neck. As he grows, he is in almost constant motion during his waking hours if he is healthy, thus giving every muscle and bone in his body the exercise it needs for growth. A baby who is "swaddled," or one who is so wrapped about with clothing, shawls, and blankets that he can not move every part of the body freely, will be hampered in getting this natural exercise. For this reason, also, the older child should not be left in his high chair or carriage for any length of time, nor be fastened by his clothing or bed covers in such a way that he can not turn his body or throw his limbs about as he wishes.

Baby Pushers.—Baby walkers should not be used; babies should not be encouraged to walk until they are quite ready for it. Too early walking may cause bowlegs; also, the baby is held for too long a time in a confined space and in a more or less rigid position and is easily overtired. A "pusher" may be made at home, which is free from these objections. This consists simply of a small weighted platform made of 2 by 4 plank or weighted on the under side with a strip of metal 12 inches wide by 18 inches long, mounted on four casters. A handle like that on a baby carriage is attached to the ends of the platform, slanting backward so as to come within reach of the baby. He should be able to grasp it easily as he stands. This contrivance will give him some support in learning to walk, yet he may drop down to rest at any moment.

Training the bowels.—This may be begun as early as the end of the first month.

The first essential in bowel training is absolute regularity. As soon as the mother takes charge of her baby after confinement she should begin upon this task. It is one which requires unlimited patience, but the result is well worth the effort involved. Almost any baby can be so trained that there are no more soiled diapers to wash after he is a year old, and many mothers accomplish the result much earlier than this. The habit of regular evacuation thus established in infancy will, if persisted in through the growing years, save endless misery from constipation in the adult. The mother should observe the hour at which the baby soils his diaper. At the same hour the next day she should hold him over the chamber, using a soap stick, if necessary, to start the movement, and thus continue day after day, not varying the time by five minutes, until the baby is fixed in this habit. As the baby grows he can be taught to grunt, to bear down a little, or to show his desire by some other sign.

This training is begun by different methods. One of these is as follows:

The baby should be held on the mother's lap, or laid on a table with his head toward her left, in the position assumed for changing the diaper. The feet should be lifted with the left hand while a soap stick or other suppository is inserted into the rectum with the right hand. Still holding the feet up, press a small chamber gently against the buttocks and hold it there until the stool is passed. The stool will come in a few minutes.

Another method is to hold the chamber in the lap and place the baby over it with his back against the mother's chest. This makes it possible for the mother to support the young baby before he is strong and able to sit alone. As soon as baby is able to sit up and hold himself he should be taught the use of the nursery chair.

A convenient time for a stool is just before undressing for bathing.

After the first three or four days, or as soon as possible, omit the suppository. At first it will be necessary to wait longer for the stool, possibly five or ten minutes.

Masturbation.—This is a common habit among children, practiced by rubbing the genitals with the hands, or by rubbing against various objects. If the baby is seen to be carrying on this habit every effort should be made to break it up as soon as possible, as it grows worse if left uncontrolled. It may be due to lack of cleanliness, or to some local condition which irritates the sensitive parts; and, for this reason, it is well to have baby examined by the doctor. The treatment consists almost entirely in imposing mechanical restraints, and in great attention to keeping the parts clean. Wet or soiled diapers should be removed at once and the parts made clean and dry. A thick towel or pad may be used to keep the thighs apart while the baby is asleep, and the hands may be restrained by pinning the nightgown sleeves loosely to the lower sheet when putting the baby down for the night. Such a baby should not be left awake alone in bed. Constant and patient watchfulness on the mother's part are required to break up this habit. Punishment is worse than useless.

Punishment.—Harsh punishment has no place in the proper upbringing of the baby. A baby knows nothing of right or wrong, but follows his natural inclinations. If these lead him in the wrong direction, the mother must be at hand to guide him in another and better one and to divert his eager interest and his energy into wholesome and normal directions. This is the golden rule in the training of babies, and one which applies to the training of children of all ages. Many parents conceive that their whole duty is to thwart and forbid, enforcing their prohibitions with penalties of varying degrees of severity, forgetting that they are dealing with a sensitive being endowed with all the desires, inclinations, and tendencies that they themselves have, and that if these natural feelings are continually suppressed and thwarted they are sure to seek and find some outlet for themselves. A child who is often punished may be so dominated by fear of his parents that, the natural expression of his vital interests being denied him , he becomes sullen and morose as he grows older.

Early Training.—The training in the use of individual judgment can be begun even in infancy; a child should early be taught to choose certain paths of action for himself; and if he is continually and absolutely forbidden to do this or that he is sometimes seriously handicapped later, because he does not know how to use his own reasoning faculties in making these choices. On the other hand, obedience is one of the most necessary lessons for children to learn. A wise mother will not abuse her privilege in this respect by a too-exacting practice. For the most part she can exert

her control otherwise than by commands, and if she does so her authority when exercised will have greater force.

Children should not be punished by being sent to bed at unseasonable hours. A generous portion of sleep should be allotted the child, graded according to his years, but lazy loitering in bed is dangerous. No circumstance is more favorable for the acquiring of impure habits than this purposeless penalty. Let the child who merits a punishment be set to some manual task, or write some portions of the New Testament, or learn by heart a beautiful hymn, or poem, or, if it be possible, be sent to confession.

"The young child should know no other way than to do what he is told. A lawless, ungovernable child, who respects neither the rights of others nor the authority of his elders, who rides roughshod over everyone about, who eats without regard to time or place, who gets his own way by crying or by stubborn insistance, is a nuisance to everyone concerned, and at the same time he is doing himself irremediable harm. Discipline begins in infancy, and throughout the whole period of childhood constant discipline—which is guidance, not punishment—should surround the child, protecting him from the formation of bad habits and teaching him fundamental lessons of self-denial and self-control.

"Every child should be able to respect the authority of his parents and to look up to them as the fountainheads of wisdom and help, whose counsel he follows because he knows his father and mother are his best friends and not because he is compelled to do so through fear. But as a recent writer has said:

" 'The ideal freedom behind the best methods of child training means freedom from unnecessary suppression, from thoughtless, unreasonable, unjust, unsympathetic guidance; it means freedom from blind, arbitrary direction; it means freedom to grow, to develop naturally and normally under constant, consistent, and thoughtful direction.' (Miriam Finn Scott)

"The lack of regard for the reasonableness of children's wishes and the arbitrary and unreasoning suppression of them are among the common causes of bad behavior in children. Enforced and rigid obedience to the commands of the parent, arbitrarily given to-day and perhaps neglected to-morrow according to the mood or caprice of the mother or father, is almost certain to lead either to outright disobedience or to deceitfulness. Obedience viewed merely as an abstract virtue is not necessarily virtuous. In fact, it is often quite the opposite both in the resultant behavior of the child and its effect upon his character. Some of the most obedient children have the least moral responsibility and are easily led into wrongdoing by others, because the habit of unquestioning and unreasoning acceptance of superior authority has been so thoroughly fixed in them in childhood that as they grow they have little independence of judgment or will power left to direct their own affairs. Parents have no right to exact from their children instant obedience save when the line of conduct insisted upon will either serve to protect the child from physical or mental harm, to develop his own character, will, mind, or judgment, and thus insure his ultimate welfare and happiness, or to protect the rights of others.

A weary mother harassed beyond endurance easily falls into the habit of 'nagging.' It is very common to hear a young, nervous mother saying 'don't' to the child so many times a day that to obey would be physically impossible unless the child were asleep. It is almost inevitable that the child in such a case will learn little or nothing of true obedience.

"As long as rigid obedience is exacted there must be a penalty for disobedience. This penalty is often quite as arbitrary and meaningless as the command and, like it, may be given as the result of momentary feeling in the parent.

"Harsh punishment inflicted in anger relieves the parent's overcharged mind, but in most cases it serves no other useful purpose and, in the last analysis, often does irremediable harm. Spanking and whipping are the easiest forms of punishment and the least intelligent. The parent, angered by something the child has or has not done, vents his own fury in this way. There is little logic in such a punishment, and less justice. The chastisement is not measured to fit the scale of the offense; its severity depends largely upon the physical strength of the parent and the degree to which he is incensed. The animal rage which it creates in the parent weakens his self-respect, and the majority of parents are heartily ashamed of themselves after such a scene with a child. It is not conducive to comfort to know that simply because one is larger and stronger one has permitted oneself to inflict brute force upon a child. But the effect of corporal punishment is even more to be deplored for its effect upon the child. Leaving out of account the possible case in which lasting physical injury is inflicted, it will still be true that in most cases the child's rebellion against being overcome and made to yield to the superior strength of another engenders in him physical fear, anger, and hatred. In either case, the punishment has not only failed to accomplish its only legitimate objects, namely, to make the child sorry for what he has done and to give him a desire to do better, but has permanently weakened the relation which ought to exist between parent and child.

"The best preventive of mischief is to provide the child with plenty of legitimate occupations, interests, and amusements. Idleness is the bane of childhood. Every normal child must have work for hand, eye, and brain, and if proper activities are not provided he will be sure to find others for himself. It must also be remembered that much of what critical adults term 'mischief' is not such at all from the child's standpoint, but is merely the result of a perfectly normal instinct on his part which leads him to seek something to do. Parents should try to discriminate between deliberately bad behavior and that which is quite innocent of such intention, however annoying it may be in its results." (Mrs. Max West)

"*Birth Registration.*—The parents should make sure that the baby's birth has been properly registered. It is well for them to secure a copy of the Birth Certificate—a legal record which may be of great value to both parents and child in later years.

"In most of the States the doctor in attendance at birth is required by law to register the baby's birth on a special form prepared for that purpose. This form usually contains the following items:

Baby's name.....
Place of Birth and Registration No. .....
Date of Birth: Day.....Month.....Year.....
Sex of Baby.....
Twin or triplet, give number in order of birth
.....
Name of Father.....
Birthplace of Father.....
Maiden name of Mother.....
Birthplace of Mother.....
Attendant at Birth: Physician, Midwife or other
.....
Address of Attendant.....

"The birth certificate is filed with a local clerk or registrar who is usually connected in the large centers with a Bureau of Vital Statistics under the Department of Health.

"Birth registration is important for the following reasons:

"1. To identify the child;
"2. To prove the child's age and place of birth;
"3. To prove legitimacy;
"4. To establish right to enter school;
"5. To prove the right to take up employment;
"6. To prove right to inherit property;
"7. To establish legal age for voting, marriage, or liability for military service;
"8. To establish right to enter the professions or to hold public offices;
"9. To prove mother's right, when a widow, to a widow's pension;
"10. To establish right to obtain passport for travel abroad.

"*Air.*—The first cry of the new-born child is for air. Its 'air hunger' must be satisfied from that moment onward. Nature makes an insistent and continuous call for air. The baby is in especial need of fresh air immediately after birth to meet the demand of its expanding lungs. It is no longer dependent upon its mother for air, as before birth, but must now rely entirely upon its own resources. The physician and nurse will see that all obstacles to proper breathing are removed from its throat and nose and that the baby is stimulated to cry so that its lungs may be well expanded. A strong, lusty cry is a sign of triumph for the new-born baby.

"The baby not only needs air within its lungs, but air on the outside of the body assists in getting rid of waste products and helps to regulate its temperature. Young babies, however, should never be exposed to the cool air for any length of time. In the hot summer months it is very desirable to assist nature in reducing the temperature of the body. Babies raised with plenty of fresh air thrive better, are more contented, and less subject to the 'comon cold' and other ailments.

"Those in charge of the baby should realize that it is necessary to have a copious supply of fresh air in the baby's room at all times. Cold air is not necessarily fresh air. In the winter months the windows of the

nursery should be raised from the bottom and a window board inserted. This will allow a supply of fresh air to enter between the sashes. In the summer months the windows should be open from top and bottom, both day and night. A simple screen may be placed in front of the window to avoid direct drafts. In the winter months good ventilation also should be secured, but the indoor temperature regulated so that it does not fall below 65° Fahrenheit in the first few months and 55° Fahrenheit in the later months of the first year. The temperature should always be judged by a reliable thermometer. The thermometer should hang near the head of the baby's crib.

"It is desirable to have an open fireplace in the nursery or in the room where baby is bathed. This aids in promoting good circulation of air, as well as affording extra heat. A baby should never be kept in a room where there is a gas stove burning for any length of time as it exhausts the oxygen very readily. A burning gas-jet also depletes the air of oxygen. An electric heater is ideal for heating a small space. Where any form of dry heat is used a pan of water should be placed on the radiator or exposed near the source of heat to give sufficient moisture to the air. If the baby's feet and hands are cold it is best to protect them with woolen socks and mittens and place a well-covered hot-water bottle at the foot of the crib. During the summer months the baby may be taken out for its first airing in ten days or two weeks. Baby should be suitably clothed, of course, and wrapped snugly in the carriage with its head protected by a hood. In fall and winter it would be wise to wait for three or four weeks before taking the baby out. It should then be given its airing for fifteen or twenty minutes at first and the time gradually lengthened. In mild weather the baby may be allowed to sleep in its carriage on a sheltered part of the porch.

"In the hot months of the summer it is especially necessary that the baby be exposed to currents of air as much as possible. It has been shown that a constant change of air surrounding the baby is very effective in reducing its temperature and in preventing heat stroke. Exposure to the direct rays of the sun at this time should be avoided; but in the cooler months the baby may be exposed to the sunlight for fifteen to twenty minutes each day with good effect, its head and eyes being protected from the sun. If no air is stirring the baby may be fanned or an electric fan used, placing it at an angle so that it will not blow directly upon the child.

"The baby should not sleep in the same room with its parents. It is best to have its own crib in a separate room adjoining the room of the mother or nurse. Whenever this is impossible its crib should be placed in a corner furthest removed from its parents and the ventilation of the room should be looked after with especial care. In placing the baby in its crib before going to sleep, great care should be exercised to see that it is situated so that it can not roll over on its face or draw the bedclothes over its head. A number of babies have been smothered in this way. The baby should never be allowed to go to sleep with a nipple or pacifier in its mouth.

"It is very important for the mother to realize that it is not only a bad habit for the baby to go to sleep on the breast, but is also dangerous

for it to go to sleep in the same bed with her. A number of instances have been reported where a mother has unknowingly rolled over on the baby during a sound sleep.

"Pure fresh air is good, not only because of the oxygen it provides, but because it renders babies less susceptible to colds and pneumonia. Babies kept in fresh air when they do take sick recover more readily than those who have been confined in hot stuffy rooms. In giving attention to the ventilation, screening of the openings should not be overlooked. Flies and mosquitoes may annoy the baby and even transmit disease.

"*Water.*—Water, both inside and out the baby's body is essential for its life, health, and comfort. The fact that a considerable portion of the body is composed of water and that mother's milk contains 87 per cent. water, shows that nature demands a liberal supply of it in the life processes. In the first few days of life the baby loses a considerable amount of water, and this is one of the reasons why there is a loss in its weight. It is advisable to give small quantities of water to the baby, half an ounce two or three times a day during the first few days, but very little need be given after this for several months if the baby is nursing regularly. Only boiled, cooled water should be given from a small spoon and this need not be sweetened. If too large a quantity of water is given it is likely to fill the baby up so much that it will not care to take the mother's breast when her milk comes in. After breast feeding is once established it is not necessary to give large amounts of water, as the milk itself contains all that is necessary. After the sixth month, however, larger amounts should be given. During the summer months when baby is perspiring freely it is well to give liberal amounts of cool boiled water in between the nursings.

"*Bathing.*—The baby should be given its first tub bath only after the cord has fallen off and the navel is thoroughly healed. Previous to that it should be sponged daily, part by part with warm water at 100° Fahrenheit, a separate cloth being used for the face and the body. A mild, white, unscented soap should be used.

"The eyes must receive especial attention. If they become inflamed and have any secretion the doctor should see them at once. If there is any secretion, they should be bathed each day with a solution of boric acid; otherwise they should not be touched. A separate piece of cotton should be used for each eye. The mouth should not be washed out with a cloth nor rubbed with the fingers, as such treatment is likely to injure the delicate lining and infection may take place. If the nose is stopped, a small piece of absorbent cotton rolled up and dipped in boric acid solution may be inserted in each nostril. The same method may be used for the ears. In no instance should any hard instrument, such as a toothpick or hairpin, be used in the nose or ears. Care should be taken to dry the ears thoroughly, and a good talcum powder dusted back of them.

"The bathing of the baby should take place in a warm room on its mother's lap while she is sitting on a low chair, or she may place the baby upon a firm table upon which a warm bath mat or turkish towel has been spread. The face and head should first be washed and then the body soaped and rinsed off with warm water. If the head is covered with oily

material or has crusts on it, warm sweet oil should be rubbed in gently, after which soap suds and warm water may be used. The body should be dried by gentle patting with a soft towel and not by rubbing.

"Special attention should be given to cleansing the genitals with as little handling as possible. The physician should examine the boy soon after birth to see if the foreskin can be readily retracted so that cleanliness may be facilitated. If the physician advises it, the boy should be circumcised. It is very necessary to see that the genitals of the girl baby are kept scrupulously clean. If any irritation or secretion appears it should be brought at once to the attention of the physician.

"The baths in the early days of life should be from 98° to 100° Fahrenheit. After the first month the temperature of the water may be lowered to 95° and during the following months gradually reduced to 80° Fahrenheit. At the close of its bath the baby should be sponged off rapidly with water at 75° or 80° Fahrenheit.

"During the summer it is advisable to sponge the baby off three or four times a day so as to prevent heat stroke. It is often beneficial to the baby to wipe its head and face with a cool cloth every hour or so. If the baby does not well stand the plain water and soap bath, that is, if its skin is tender and becomes reddened and irritated, it is advisable to give a bran bath. That is made by placing a cupful of bran in a muslin bag and pressing it out in the bath water. After the bath the baby should be quickly dried by patting, and talcum powder dusted in the folds of the arms, neck, and buttocks. It should then be properly clothed and nursed, after which it should be laid down quietly to sleep.

"*Food.*—There is only one ideal food for the baby, and that is its mother's breast milk. Breast milk is not only safest for the baby, but in the long run the most economical. It is baby's life insurance which will pay big dividends. Every normal well mother should feel that it is her first duty to nurse her baby. Even if she is not able to nurse it throughout the entire period of infancy, it will be a great help for the baby to get the benefit of her milk if only for a few weeks or months. As a matter of fact, if the mother has taken good care of herself during pregnancy and her strength has been conserved at the time of delivery, and she is given a good nourishing diet containing the essential food elements, she should be able to nurse her baby satisfactorily. It should be taken for granted that every normal mother can nurse her baby until it is conclusively proved that she is unable to do so.

"During the first two or three days there is usually very little milk in the breasts, but if the baby is put to the breast and is allowed to suck, the flow will be stimulated. During the first few days the baby should be put to the breast every six hours, and after the flow is established on the third or fourth day it should be put to the breast regularly every four hours. Convenient hours for nursing are 6 a. m., 10 a. m., 2 p. m., 6 p. m., and 10 p. m., and only one feeding from 10 p. m. to 6 a. m. If this schedule is adhered to rigorously from the first, most babies will thrive on it and in a short time will be able to go from ten at night to six o'clock in the morning without any feeding. This will give the mother much needed rest.

"If the baby is to secure good breast milk it is absolutely essential that the mother herself take only those articles of food which are nourishing and known to promote a satisfactory milk supply. She should eat liberally of fresh vegetables and fruit, especially the leafy vegetables, and drink at least a quart of milk a day either alone or in the form of cocoa or milk soups.

"A very important matter, however, in the establishment of breast feeding is the regularity of the nursing itself. This should be established from the very first nursing period and rigidly adhered to, using the clock as the guide to the times for feeding. It has been found that most normal babies will do best when fed at four-hour intervals. This not only gives the baby a chance to digest its food thoroughly and to secure sufficient rest before the next feeding, but it also makes possible longer periods of rest for the mother, which is particularly important during her nursing period. If the baby does not thrive well on the four-hour period after a consistent trial, it should, of course, be put upon a three-hour basis.

"The length of time at each nursing is important. There is a tendency on the part of the mother to allow the baby to stay on the breast too long. It has been found that if the breasts are secreting abundantly, the baby obtains a large percentage of its milk during the first five or six minutes, and from that time on the quantity becomes less and less. After ten or fifteen minutes the baby has probably obtained all that is of value at that one nursing. It is better to allow the baby to nurse one breast thoroughly and, if it is satisfied, to alternate at the next nursing to the other breast. On the other hand, it is not wise to take the baby from one breast if it appears a little restless and transfer it to the other, nor is it desirable to allow the baby to leave the breast before it is thoroughly nursed out. This tends to dry up the breasts.

"One reason for unsuccessful nursing during the early weeks is that the baby is not held comfortably at the breast. It should be supported in such a manner, whether lying down or with the mother sitting up, that it rests at an angle which makes it possible for the baby to breathe and to swallow the milk without difficulty. The mother should press back the breast from the nostrils of the child with one hand so as to give it plenty of air. After feeding, the baby should be laid quietly in its crib and allowed to sleep until time for its next nursing.

"The proper care of the nipples is very important. They should be carefully wiped off with a soft piece of clean cotton dipped in boric acid solution before and after each nursing. If there is a tendency for the nipples to crack or if they are retracted, the attention of the physician should be called to them and he will take immediate steps to correct it.

"The best way to determine if the baby is getting enough breast milk is not to judge by whether the baby cries too much, or the mother thinks her milk too weak, but to weigh the baby before and after each nursing for twenty-four or forty-eight hours. By subtracting the weight before nursing from the weight after nursing each time, the difference will give the amount of milk received by the baby at each feeding. The total of these will be the amount for twenty-four or forty-eight hours. The physi-

cian will know from this whether the baby is receiving enough milk or not.

"There are certain signs of unsuccessful breast feeding which the mother may observe herself. If the baby's weight is stationary for several weeks, or if it is gradually losing weight, this may be a sign of failing milk supply. If the baby is uneasy and finds difficulty in securing the milk or is fretful while nursing, it may not be getting enough. If the baby remains too long on the breast and shows its displeasure by crying when removed, the amount of breast milk should be determined. When baby vomits after its feedings or if the stools are too loose or too constipated the physician's attention should be called to it as it may indicate difficulties in its feeding. On the other hand, a simple spitting up of food after feeding or green stools do not necessarily indicate a bad condition; and if the child is gaining weight steadily very little attention need be paid to these.

"There are very few conditions which make it undesirable for the mother to nurse her baby at the breast and these should be determined by the physician after careful study. If the mother has chronic tuberculosis, the baby should certainly be taken from the breast and fed by a healthy wet nurse or placed upon a good cow's milk modification, properly pasteurized. If the mother is suffering from chronic disease in which the nursing would deplete her strength, it is wise to consider artificial feeding. If the mother becomes pregnant again it is not desirable to keep the baby on the breast for any length of time after the pregnancy is determined. Slight temporary illness on the part of the mother or the recurrence of menstruation does not necessarily indicate the need for stopping breast feeding.

"There is no perfect substitute for breast feeding. The mother's milk not only contains all the necessary food elements for the child in the right proportion, but it is delivered to the baby at the proper temperature and free from any harmful germs. It is available at the right time for nursing. Breast fed babies are not only healthier and happier, but they grow more normally than babies who are fed on the bottle. They will not be so subject to upsets of digestion and bowel troubles as bottle fed babies. Breast fed babies are not so liable to take infectious diseases. If they contract a disease they usually recover much more rapidly and completely than artificially fed children.

"No attempt should be made to wean the baby until the seventh or eighth month, and not then if it happens to be in the summer months. If it is necessary to give the baby any supplementary feeding, it should always be determined by a physician after carefully studying the baby's record. The physician should determine whether the mother has enough milk in her breasts by weighing the baby both before and after each feeding for one or two days. If it is found necessary to supplement mother's milk, the physician may prescribe a simple dilution of good clean cow's milk, properly pasteurized or boiled. The milk is pasteurized by heating it to a temperature of 145° Fahrenheit, as indicated by a good thermometer, and keeping it at that temperature for thirty minutes, after which it is rapidly cooled. Pasteurization of the milk should always be done in the feeding bottles after the milk has been modified. Pasteurized milk should be used within a day after pasteurization.

"To boil the milk, place it in an open pan over the fire and allow it to come gradually to a boil, when small bubbles will begin to appear. Allow it to boil two or three minutes; remove from the fire, and cool by placing it in a pan of cold water.

"No other food is necessary for a baby up to the seventh or eighth month, except a small amount of orange juice each day. If the teeth happen to appear in the fifth or sixth months and the baby is otherwise developing normally, it is allowable to let it chew on a crust of toast or hard cracker once a day, great care being taken that a large piece of toast does not break off and go into the baby's windpipe. When the baby arrives at seven or eight months of age, weaning should begin gradually under the direction of a physician. If the baby has been doing well it is not desirable to prolong breast feeding after nine or ten months, except in the summer time, as the baby needs other food toward the end of its first year. A good way to begin to wean is to substitute for one of the breast feedings a bottle or cup of cow's milk diluted in the proper proportions. The milk should always be pasteurized or boiled before giving it to the baby. After the baby has adjusted itself to one feeding of cow's milk a second may be substituted for one of the breast feedings, and so on until the baby is completely weaned from the breast. While this is in progress, it is a good idea to give the baby one feeding a day of strained beef broth with well-cooked farina or cream of wheat. It is also allowable to substitute a soup of well-cooked vegetables, such as mashed carrots and finely chopped spinach.

"If it is necessary to place the baby upon the bottle early in life, orange juice should be given once a day, beginning with one tablespoonful well-diluted with water, and gradually increasing the amount until the baby is getting an ounce of orange juice daily. Tomato juice from canned tomatoes or pressed out from raw ones may be used with the same effect, namely, to prevent the development of scurvy. Toward the end of the first year, the baby should be receiving about one quart of milk a day together with one vegetable soup feeding and fruit juices. At this time it can be allowed to chew on toast or crusts, but no meat or eggs should be given until the second year.

"If breast feeding fails, clean cow's milk, suitably modified by simple dilution, will usually prove satisfactory. It is not necessary to give the baby any patent or proprietary foods. Most patent foods contain large quantities of starch or sugar and are more expensive than whole milk. The same sugars and starches which are effective in patent foods can be obtained from the druggist or grocery store as starches or sugars, and added to a cow's milk mixture if desirable. They make the baby take on weight rapidly, but this is not necessarily an addition of good flesh. Such babies are very likely to be most seriously affected if they are taken sick with summer complaint or infectious diseases. It must be noted, however, that considerable success has been attained in the production of dried milks, and some of these may be used with perfect safety provided they are obtained from a reliable firm and diluted according to directions. However, the mother should rely first upon breast feeding and only as a last resort

take to modifications of cow's milk in simple dilutions, or to dried milks, and then only upon the advice of a physician.

"*Clothing.*—The clothing for the young child should be simple, loose, and comfortable. The weight and kind of clothing will depend largely upon climate, temperature, and physical condition of the child. An abdominal band of light weight woolen or knitted material about five inches wide is usually used during the first three weeks, but it is best discarded after the cord has been removed and the navel thoroughly healed. It very often makes the baby feel uncomfortable and otherwise may do a certain amount of harm. In premature or weak babies it is well to retain the binder for several months.

"The first diapers may be made of fine cheese-cloth, as it is very soft material and can be easily washed. The later diapers may be made of bird's-eye cotton and should be large enough so as not to limit the movements of the legs nor bind the baby too tightly. A convenient way to put on the diaper is 'square,' and not as a 'triangle' brought up between the legs. It is necessary to change the diapers as soon as they are soiled and thoroughly to clean and powder the baby before applying another diaper.

"The undershirt is best made of cotton or wool, or wool and silk mixtures. It should be opened down the front and be large enough to slip off and on easily. Size Number 2 will usually be satisfactory. The petticoats should be made of all wool or part wool, or flannel, and of different weights for warm and cold weather. They should be made to extend about eight or ten inches below the baby's feet.

"The outer clothing should consist of simple materials, usually white cotton goods. A very convenient style is that of the kimono with draw strings in the neck and sleeves. Simple slips may be made of white cotton goods, or nainsook, with short sleeves. For outdoor wear baby should have a good coat and cap or hood, preferably made of wool for winter and light goods for summer. It should also have knitted woolen bootees, and stockings which should be drawn up and pinned to the lower edge of the diaper. The stockings can be dispensed with when the baby is in its crib. It is best to have several sets of clothing so that one may be cleaned and ironed while another is in use. The clothes should always be simply made and not have tassels or trimmings which the baby can tear off and put into its mouth.

"*Mothering.*—It has been clearly shown that babies raised in institutions, even tho they may have all the scientific care available, do not as a rule thrive so well as those who are kept with their own mothers. The reason for this is mainly that the baby needs a certain amount of mothering each day. It needs to be cuddled and turned over at intervals and to be held up and patted gently on the back after nursing. This human touch will not interfere with its routine of sleep or feeding. The mothering is not only good for the baby, but it is desirable for the mother herself, as it keeps up her interest in the baby, making it easier for her to nurse and to keep her eye on the baby's needs. When it is said that mothering is desirable for normal growth and development, it is not meant that the child be picked up every time it cries or be 'shown off' to fond relatives early and

late. The mother must learn from experience when it is necessary to handle the baby and when not. It is very easy for the baby to get into bad habits of crying if it is taken up every time it cries.

"A word may be said here as to the possibility of giving the baby who has lost its mother some advantage of the mothering by another woman. If the wet nurse is healthy and has sufficient breast milk for her own baby it is quite possible to increase the supply so that another baby may be fed at her breast. This would give it the advantage not only of breast feeding, which is all important, but of the mothering which it so much needs.

"*Nursery.*—Wherever possible a special room should be set aside for the nursery. This room should be light and airy, capable of good ventilation and heating. It is desirable to have an open fireplace in the nursery. The room should be simply fitted with very few hangings, the floor and walls of such material that they can be easily cleaned. The bassinet or crib should be placed in that part of the room away from drafts and direct sunlight. A well-padded and lined clothes-basket makes a very satisfactory bed for the baby in the early months.

"All articles for the baby, such as clothing, bath utensils, etc., should be easily available. A chest of drawers is very convenient. A low dressing table, with all the articles for clothing and dressing near at hand, will save the mother many steps. A play pen is very useful when the baby begins to crawl and walk. Several low comfortable chairs will complete the furniture.

"The nursery should be thoroughly aired and sunned every day. A very good time to do this is when the baby is being taken out for its bath or nursing, or for a ride in its carriage in the open air. The room should be suitably warmed before baby returns. No one should be allowed in the nursery who has a cold, or who has recently come from a home where there is sickness. It is best not to allow other children to come into contact with the baby, as it is extremely important to protect it from infectious diseases. No one should be allowed to kiss the baby on the face.

"The temperature of the nursery during the day should be kept about 65° to 70° Fahrenheit, but at night it may be lowered to 55° or 60°. As the baby grows older it is safe to let it be even colder than this, altho the room should never be allowed to get below the freezing point.

"*Vaccination.*—Smallpox was formerly one of the greatest scourges from which children suffered, and a great many babies died of it. Since vaccination against smallpox has been widely used and made safe for every baby, very few now contract the disease. The baby should be vaccinated during its first year of life. This should be done by a competent physician who secures reliable vaccine produced under government supervision. If the baby is properly vaccinated, either on the arm or leg, and suitably protected afterwards, it usually suffers very little and shows a typical 'take.' This vaccination will protect it against smallpox in case it is exposed and should give to it a good immunity until it enters school.

"It may be mentioned that young babies are not very susceptible to diphtheria and very often escape it even when there is diphtheria in the home. After six months of age, however, they are more liable to take the

disease. A simple method called the Schick test may be applied to the skin of the arm to tell whether the baby is liable to get diphtheria or not. If the test shows that the baby may take diphtheria, it is very desirable that it be immunized with toxin antitoxin, which may be obtained by the physician from the local Health Department. This renders it immune to diphtheria for a considerable length of time, especially during the period of childhood when it is most liable to take the disease.

"*Supervision.*—During the early days of life the baby will have the loving care and attention of its mother and nurse. The doctor will give the baby a thorough physical examination shortly after birth. He will then be able to suggest to the mother the necessary measures for the care of her baby. This attention, important as it is in the early weeks, is not enough. Every well baby should be brought to the physician at regular intervals of two or three weeks so that he may note how it is growing and see if any abnormal conditions are developing. He will also be in a position to advise the mother as to supplementary feeding and weaning when necessary.

"The mother will understand from the very first that the doctor should be sent for if any symptoms of disease arise. She should not wait, however, until the baby is frankly ill, but send for the physician when the earliest suspicious symptoms appear. If the baby is very restless or feels drowsy, if it has a fever and develops diarrhea, if it has a running nose, skin eruptions, or cries from pain, the doctor should be called immediately.

"It is well for the mother to remember that the baby cries for a number of different reasons. It is true it may be hungry, but more frequently something else is the matter. Its clothing may be uncomfortable, or its diapers soiled. It may be suffering pain from a pin, or may be too warmly clad. Babies who have had their own way from the start very often cry to attract the attention of the mother and secure what they want. Later in the first year of life the baby may actually cry because it is angry at not obtaining its wishes. Then there is the low whining cry of the baby who is sick, and the sharp intense cry of the baby suffering from colic. All of these the mother should learn to interpret properly so as not to be unduly alarmed when the baby cries.

"GROWTH AND DEVELOPMENT.—*Weight.*—Both mother and father should take a lively interest in the growth and development of their baby. It is not only of great interest to the parents that the child grow normally, but its whole future well-being is largely wrapped up in the manner in which it develops during the earliest years.

"The new-born baby is one of the most helpless of creatures. It can neither see nor hear for some hours after birth; it has only a cry with which to express its feelings; it can neither walk nor talk nor clearly express its desires. During the first year a tremendous development takes place along both physical and mental lines. The baby's brain grows more in proportion to its weight the first year than in any other of the remaining years of life. It grows proportionately more in weight and height during its first year than it will at any other equal period of life. The parents

should, therefore, keep a very careful written record of all those things which indicate normal growth and development.

"The best index to growth of the baby is its weight. It should be weighed shortly after birth and regularly every week during the first year of life. Weight should be taken each time with the same clothing. It should be taken at the same time of the day, preferably before its morning bath. Weighing should be done on a reliable beam balance scales which measures at least to one ounce and preferably to the half and quarter ounces. The spring scales, so frequently used, are not reliable. It is very difficult to weigh a baby upon them accurately.

"The average weight of normal boys at birth is about seven and one-half pounds, and that of girls, seven pounds. Variations of a few ounces above and below these weights do not necessarily indicate any abnormality. If the baby is very small, it may indicate prematurity. In this case it may need extra attention as to feeding, warmth, and other special care.

"During the first few days the baby usually loses from six to ten ounces in weight, but this is regained within a week or ten days after the baby has been put on the breast and is nursing regularly. The gain in weight during the first month is not usually so great as that of the succeeding months of the first year. From the first month through the sixth the baby should gain from four to six ounces a week, and from the sixth month to the end of the first year it should average from three to four ounces a week. It is not to be expected that the baby will always gain the same each week. There may be periods in which it will gain very little or even remain at the same weight. This it will often do after an acute illness or if the breast milk is not sufficient in quality or quantity. During the summer months the gain in weight is less than in the fall and winter. The main point is to see that the baby gains steadily. It should double its weight by the sixth month and treble it at the end of the first year.

"The baby's weight is the best indication we have of its growth and general well-being. It is for this reason that the mother should keep a very careful record of its weight in a book or on a chart prepared for that purpose. Should the baby be stationary or lose in weight, the attention of the physician should be called to it and the exact cause determined. Babies can very often be made to gain rapidly in weight by feeding them with patent foods containing considerable quantities of starch and sugar. This gain, however, is not normal and such babies are very likely to suffer during their first summer. If they acquire any of the infectious diseases, fat, pasty babies are more seriously affected. Babies fed regularly at the breast grow more normally than those that are bottle fed, especially during the early months of life. After the sixth month the breast fed and bottle fed babies gain at approximately the same rate. But normal growth and development are more readily attained by breast fed babies.

"*Height.*—The growth in height is not so reliable an index of development as that of weight, but it should, nevertheless, be watched and recorded. The average baby at birth is about twenty inches long. For the first six months there should be a gain of from four to five inches, and during the second six months, about three inches. At birth the baby's

limbs, especially its legs, are poorly developed, but as it grows the limbs develop and not only increase in length but also in strength.

"At birth the head, abdomen, and chest are approximately the same in circumference, but after the baby grows older the head becomes relatively less and the abdomen and chest greater in proportion. At birth there are depressions in the front and back of the baby's head, called fontanels, which will be gradually filled in with bone as the child develops. The bones surrounding the one at the back of the head usually close in from six to eight weeks, and the one in front is not entirely covered with bone until about eighteen months. If these openings are noticed after that time and the head remains relatively large and square shaped with broad frontal bones, the child is probably suffering from rickets, and should receive the careful attention of a physician.

"*Posture.*—Immediately after birth the baby must assume a lying down posture. It is remarkable that a number of babies will be able to cling to the hands or a stick, if put into its hands, and can sometimes be lifted up by them. On account of the weakness of its muscles the baby must continue to recline for several months. If it is held up its back and head should always be supported by the hand and arm of its attendant. At about the third or fourth month the baby, if it has properly developed, should be able to hold up its head without help. From the sixth to the seventh month it should be able to sit upright without support at its back. If it has developed normally the child will begin to creep a month earlier than this. At the eighth or ninth month the baby will usually try to stand on its own feet and attempt to get about by clinging to chairs or other articles of furniture in the room. At the eleventh or twelfth month the child should be taking some steps alone. A good many babies will be walking at the end of the first year. Some will not be able to do so until fourteen or fifteen months. In assuming any of these postures the child should be allowed to take its own course and not be forced by adults to assume any position on its feet or encouraged to walk before it does so alone. This is especially important, because the child's bones are still flexible and liable to bend if weight is put upon them before enough mineral salts are deposited and the muscles are adjusted to support the upright position.

"It is also unwise to encourage children to walk with mechanical contrivances. If the child is late in assuming any of these postures or does not try to walk until eighteen months of age, it may be suffering from rickets or other disorder, or it may be backward mentally. In either case it should be investigated by a physician. The normal healthy baby will take delight in the development of its new-found functions. It should not, however, be overstimulated in carrying out any of these. Before the third month a baby should always be raised by supporting the head and shoulders. It should never be picked up by its hands or thrown into various postures in the early stages of its development.

"*Senses.*—At birth the baby's senses are poorly developed, or defective. It is thought that babies do not see, hear, or smell at birth. These all gradually develop as the baby comes into contact with its new environment. The reactions of the baby are instinctive reflexes at first—its crying

when slapped, or when coming into contact with cool air; its sucking when put to the breast, etc.

"During the first month or two the baby's eyes do not seem to be co-ordinated. This is sometimes manifested by the baby looking cross-eyed, or one eye moving in the opposite direction from the other. About the second or third month the eyes seem to focus on objects and will follow a person or light about the room. (Some babies at a much earlier period will follow a light.) Gradually other objects are discerned, altho it is some months before the child shows any sense of proportion, of direction, or position, in its handling of objects. By the end of the first year the baby delights in feeling various articles, particularly those that are round or smooth and those with which it can make a noise.

"The baby's hearing is also defective at birth, probably on account of the external ear and the tube from the middle ear to the nose being obstructed by mucus or oily material. After this has been removed and the baby has cried vigorously, it can undoubtedly hear to some extent but does not understand the direction of the sound nor its relative importance. At the end of the first month the baby is undoubtedly affected by sounds and is easily disturbed by a sudden noise when it is asleep.

"Friends are recognized in the second or third month, and at that time the child will turn its head in the direction of spoken words. During the fifth or sixth month the baby attempts to make sounds which are at first incoherent, but later, towards the end of the first year, after it has frequently repeated the sounds of words which are spoken, it will begin to say such words as 'mamma' and 'dada,' and other simple baby words. At the end of the first year it can say a few words of one or two syllables which are easily understood.

"There is no positive indication that the sense of smell is developed early, altho the baby will turn away from an irritating odor if suddenly presented to it. The baby does not seem to develop the sense of smell with any nice discrimination until later. The sense of pain is undoubtedly present at birth, as the child will recoil from painful objects, such as the prick of a pin, and will cry when it is injured. Delicacy of touch, with the exception of the tongue and lips, is certainly not developed until the later months of the first year of life, and then it comes on gradually as the child compares its touch sensations in handling a number of different objects. The baby's sense of position is one of the last to be developed and does not come fully to the child until it has obtained the proper use of its legs and is running about. It should be kept constantly in mind, therefore, that a baby is not to be stimulated by sights, sounds, and objects presented to it at a time when it is either unconscious of them or can not appreciate their values." (Richard A. Bolt, M. D.)

Dr. Bolt's views on vaccination have not the sanction of all scientists.

At the initiative of medical authorities the Dutch government has introduced into parliament a bill to suspend for three years the compulsory vaccination of school-children, because, in consequence of vaccination, the people of Holland are becoming infected with a serious disease which in some instances has proved fatal. Dr. H. Alderhoff, director of the State

Serologic Institute, at Utrecht, has published in the December, 1927, number of the *Tijdschrift voor Sociale Hygiene* an article in which he pleads for the complete abolition of compulsory vaccination. Dr. W. Storm van Leeuweh, of the University, says in the daily *Telegraaf* of Amsterdam that the increase of encephalitis is undoubtedly an effect of vaccination and that, in view of the uncertain value of the practice, it should not be imposed by law.

Opposed to these views is the Report of the State Medical Society of Wisconsin for 1927. According to their Report, in 1922, there were 5,216 cases of smallpox in the state with 100 deaths. In 1927 there were 350 cases with one death. This decrease they attribute to vaccination:

"Experience shows that a single vaccination will undoubtedly protect the person so vaccinated for a period of at least five years. Two successful vaccinations, or a vaccination and a true immunity reaction, will undoubtedly insure throughout life against death from smallpox."

The society believes that the ideal time for vaccination is in infancy, because protection begins at once and the course of the vaccination "take" may be undisturbed by external causes.

In such a conflict of scientific opinion, it is difficult to form a prudent judgment. It is evident, however, that the decline of incidence and mortality of smallpox may be due to causes other than vaccination.

Childbirth should be treated as a major surgical case.

The following declaration of Dr. Walter G. McGuire, of Chicago, Ills., presents a forcible view:

"Every amateur in humanitarian movements, every social worker, no matter what his creed, recognizes the alarming waste of human life at childbirth and lifts an honest voice calling for improvement in teaching and in hospital facilities. We cannot blind ourselves to the fact that 20,000 mothers die in the first weeks of infant existence.

"We are told on incontestable authority that of the 20,000 who die annually in this country in the travail of labor, or as a sacrifice to childbirth, 10,000 die from sepsis, 6,000 from toxemias, 2,000 from hemorrhages, and the remaining 2,000 from organic disease, such as heart, lung, kidney, etc. Statistics that are not confined to one nation or limited to a single race confirm the truth that 90 per cent. of infections are preventable, that 75 per cent. of toxemias can be averted under proper care and control, and that accidents, hemorrhages, etc., can in the majority of cases be successfully treated.

"When we consider that the mortality in well-conducted hospitals and clinics is only a fraction of 1 per cent., we are forced to conclude that 'home obstetrics' is the cause of this awful toll of death. Between 40 and 50 per cent. of confinements in the United States are cared for by midwives. The doctor is called in only when the case becomes dangerous and there is likelihood of death, or when the necessity of signing a death certificate presents itself. Our evidence must be of an inferential nature and must be drawn from a close scrutiny of the knowledge, experience, technical skill, medical training, and conscious responsibility of the parties concerned.

"It is true that labor is a natural process and in most cases functions normally. But it is also true that it requires rare judgment to tell which case is going to end normally or abnormally, and nature cannot provide against unclean hands and meddlesome interference.

"Miss Cronnell, whose authority we can hardly question, states that of the 3,000 midwives in the state of New York, less than 10 per cent. can be classed as capable and reliable, while the 90 per cent, are hopelessly dirty, ignorant, and incompetent. Midwives attend 39 per cent. of all births in New York City, 75 per cent. of all in Chicago, and 50 per cent. of all in the state of Wisconsin (Grace Abbot).

"Public officials of municipalities, states, and nations must be educated to the thought that obstetrics is a science and surgery, and not an art to be dabbled in by every laic without regard to positive knowledge and careful training. Why, we may ask, does the state license a woman for the practice of obstetrics when she can hardly read or write? Why does it tolerate schools which hand out diplomas to such women without discrimination for a mere monetary consideration? Why? Because the nation has not grasped the significance of the awful holocaust of human lives offered annually to the ignorance of midwives. Surely a public opinion and a state consciousness, which demand such a varied knowledge in the physician and graduate nurse, should not be satisfied with a ready-made midwifery when it comes to the most dangerous and critical period of a woman's life, and to the most difficult days of a child's existence."

Soon after pregnancy is believed to be present the woman should be examined by her accoucheur carefully chosen. Thereafter she should report any pathologic symptom,—hemorrhage, constipation, diminished urine, nausea, vomiting, etc. The surgeon should be advised of her blood pressure and general condition.

The first point is to make sure that the woman is pregnant. The method of this investigation differs according to the date of impregnation. Certainty of pregnancy in the early stages is not always possible: probability may be reached. It is evident that an error in the diagnosis may have very grave consequences.

In the first four months there can be no absolute sign of pregnancy. The woman in some cases may wilfully deceive the accoucheur; she will withhold facts and make false statements. In other cases she herself may be deceived and believe herself pregnant. In the first trimester the cessation of menstruation in a regular woman is one of the most probable signs. It fails, however, to be an absolute evidence because a woman who has never menstruated may conceive; and a woman may conceive during amenorrhea.

Cases are recorded in which women conceive again shortly after delivery. Rice (Am. Homoeopathist, Chicago, 1881, 206) records the case of one woman who conceived 28 days after her delivery, and of another whose period was 21 days. Moreover a woman may conceive during pathologic amenorrhea or in rarest cases after the menopause.

In the second place, menstruation may continue after conception.

These extraordinary phenomena do not shake the cessation of normal

healthy menstruation as a sign of pregnancy, but they move the accoucheur to weigh other facts with it.

Another diagnostic sign of pregnancy is the morning nausea and vomiting. It usually appears about the fourth week. About one-third of gravidae have the morning sickness as a sympathetic symptom. Of course this sign is only presumptive, as such nausea may have other causes.

The enlargement of the breasts is a sign, as is also the woman's belief that she has strange sensations which she associates with pregnancy. As a rule a gravida will frequently urinate.

The nipples darken, become more erectile, and the striae gravidarum may appear on the breasts. These latter signs lose their value in multiparae.

Hegar's sign of pregnancy is the softening and compressibility of the isthmus uteri and lower uterine segment ascertained by introducing the thumb in the vagina and the finger in the rectum and compressing the isthmus. This sign appears in multiparae about the sixth week; in primiparae in the eighth week. It is highly presumptive. Steady increase in the size of the belly is one of the best signs: a large uterine tumor enlarges the belly, but not as rapidly as pregnancy.

The ovum attached to the uterine wall throws off an alien albumin. The blood at once produces a proteolytic ferment to react against this alien body. Abderhalden invented a test to detect the presence of this protective ferment in the gravida's blood. Thus Abderhalden's test may be used in diagnosing pregnancy. It is possible only in well-equipped laboratories; it is subject to many technical errors. It is of little practical clinical use. This method is called serologic diagnosis. It may be employed in the fourth week of pregnancy. Many authorities deny that the serologic test be specific. As a negative test it is of value.

In the second trimester the gravida feels the "quickening", the fetal movements, like the flutter of an imprisoned bird. She feels also the wondrous sensation of motherhood. In a normal intelligent woman this may be considered a reliable diagnostic sign. In this period there are unconscious uterine contractions.

Signs of pregnancy now become cumulative. Soon after the 12th week fetal movements may be felt, seen, and heard. If the accoucheur pushes the foetus up toward the fundus by introducing his finger per vaginam and gently pushing upward on the uterus just above the cervix, if a foetus be there the accoucheur may feel the foetus come back to rest as it descends from the fundus. This repercussion is called ballottement. It is observable from the sixteenth to the thirty-second week.

The fetal heart tones are the most reliable signs of pregnancy. By reason of the perfected stethoscope the fetal heart-beat has become a very certain sign. Its range is from 132 to 144 per minute. The stethoscope is applied in the median line at the edge of the pubic hair. The mother's pulse should be noted at the same time to remove the possibility of error. No adult's pulse is as rapid as the fetal heart-beats.

In 1911 O'Donnell of Chicago obtained an X-ray of a fetus of six months.

Palpation of the fetal body may be practised by a skilful accoucheur.

In the third semester many of the preceding signs are made clearer and more positive: other evidences are added. The accoucheur has no pains to find the movements of the child. Direct palpation of the fetal body is easy: the fetal heart-tones are louder and more constant; fetal movements are more evident; the change in size and form of the uterus is striking; the X-ray readily reveals the fetal skeleton.

"Without positive evidence to the contrary, a foetus is considered alive." (De Lee)

It is difficult to ascertain the death of the foetus in utero. Merely negative signs are not sufficient. The evidences of the death of the unborn foetus are:

1. The cessation of fetal movements. This is only a presumptive sign.

2. The absence of the heart-tones. If the examination be careful and prolonged it is of much value, but not absolute.

3. The cessation of growth of the uterus. This is a good sign if carefully and repeatedly done, together with other evidence. It is not positive.

4. The palpation of the softened and macerated scalp and macerated fetal head. The scalp is boggy; the bones of the head are freely movable. The maceration has destroyed the cartilaginous joinings. This state of the foetus may give rise to a discharge of bloody liquor amnii or foul smelling milky fluid. All the elasticity is gone from uterus and foetus. The gravida is languid and chilly: a foul taste is in her mouth. The palpation of the fetal head in such condition is the only positive sign of fetal death. The condition is not dangerous: delivery will soon occur.

While spontaneous expulsion of the dead foetus may be awaited in many cases, it is not possible in all. A foetus too large for the maternal pelvis would not thus be extruded. In such case the gravida would suffer from the absorption of toxins from the dead foetus: fatal sepsis would be liable.

A foetus may die in the parturient canal in the progress of delivery. It is evident that such foetus must be surgically delivered. Therefore it is necessary to establish some sign, the most probable that shall justify surgical action. Though the cessation of the heart-tones be not a certain positive sign, it is the best obtainable. When therefore a foetus be inextricably impacted in the pelvis, and a competent test of the heart-tones and of all the fetal movements, for a considerable time, fails to reveal their presence a surgeon is allowed to extract the foetus by any operation judged best to save the mother. He may presume the foetus to be dead. He should push the foetus back, if possible, and continue his observations. A foetus does not immediately die by its impaction. It may be pushed up and a Caesarean section performed. No operation which directly tends to kill the child is allowed, even though the child must certainly die. It is only a question: What may a surgeon consider sufficient evidence that an unborn child be dead? Absolute certainty is not obtainable. If the surgeon employs diligent and sustained observation, and watches closely for every sign of fetal life; if he waits as long as the safety of the mother per-

mits; if no sign of fetal life be observable, and there is no other way of delivery save a mutilating operation he is permitted to perform it. He should confer conditional baptism if possible. It would be well to confer such baptism at the first possible moment, after it is realized that the delivery is to be very difficult.

Early in the eighth month of pregnancy the gravida should be surgically examined to determine her ability to bring forth her child. An important feature of this examination are the measurements of the pelvis. Many pelvimeters are in use. The circumference of the pelvis is an important measure. In normal pelves this is about thirty-six inches. The pelvic diameters are before described. The internal measurements are essential. It is not an easy operation: the skilful accoucheur must estimate what pelvimetry fails to demonstrate. If the diameter of the pelvis between the crests of the ilia be less than 11½ inches the woman is narrow in the hips and may have dystocia.

External measurements are of little use in fat women. There are many classes of abnormal pelves, not all of which unfavorably react on labor. The principle is that any pelvis which offers a narrow or distorted parturient canal may obstruct labor. The pelvis may be too narrow, flat, scoliotic, rachitic, asymmetric, coxalgic, etc.

Girls afflicted with severe spinal curvature, rickets, hip-joint disease should not marry.

A contracted pelvis may permit a normal delivery of a small child. Hence the size of the head and other dimensions of the child must be determined. Perret invented a cephalometer for this purpose, but De Lee discards it, and recommends the ordinary pelvimeter. He is satisfied with the results. The relation of the fetal head to the diameters of the pelvis determines whether the child may be born by the natural mode of birth. Pelves whose antero-posterior diameter is less than four inches are contracted.

When a pelvis is of less than normal dimensions it is called justo minor. If it be equally contracted in all its diameters it is called aequabiliter justo minor. In the osteomalacic pelvis, owing to the softening of the bones, the pelvis is crowded together as though compressed by the grasp of a mighty hand.

Abnormal presentations of the foetus are much more liable in contracted pelves. According to Litzmann the normal 96 per cent. of cephalic pole presentations is in contracted pelves reduced to 84 per cent.

A pelvis may be said to be absolutely contracted when there exists an insurmountable disproportion between the size of the foetus, especially of his head, and the pelvic canal. As the measurements of the pelvic diameters recede from the measurements which we have assigned as normal the liability of this disproportion increases. Williams and Klien declare that a pelvis with an antero-posterior diameter of less than 3.75 in. and a transverse diameter between the tuberosities of the ischia of less than 3.35 in. offers an insuperable obstruction to labor, and demands Caesarean section, pubiotomy or craniotomy.

Craniotomy is by the ethical law thrown out of the reckoning; pubiotomy is difficult, dangerous, and often leaves bad results. The Caesarean section remains the operation of choice.

The obstetrician must not be precipitous in declaring a disproportion to exist: nature often accomplishes a delivery at first thought impossible. On the other hand the woman with an absolutely contracted pelvis must not be allowed to go into labor: the Caesarean section should be performed at once. I should not hesitate to recommend it in all cases where a prudent doubt exists of the necessary capacity of the pelvis.

"In the highest degree of pelvic contraction the child has the best chances for its life, because the absolute disproportion is usually early recognized and caesarean section performed. In the very slight pelvic contractions the infant mortality is not much higher than usual, but anomalies of the mechanism of labor must be remembered. Many children still are lost in the cases where the pelvis is contracted enough to show in the course of labor, and this is because the accoucheur has not carefully studied his patient. Too many women are blindly allowed to go into labor, and only after the good time for caesarean section or pubiotomy has gone by is the spacial disproportion discovered. Often it is found only after the accoucheur has failed to deliver with forceps.

"Asphyxia causes the largest number of fetal deaths, and it is brought about by—(1) Interference with the placental circulation, the result of the frequent and powerful uterine contractions—the blood is forced out of the uterus by the pains; (2) compression of the brain as the head is jammed through the inlet—the pressure irritates the pneumogastric, slows the pulse, and compromises still further the oxygenation of the fetal blood; (3) as the effect of the early rupture of the membranes and the escape of the liquor amnii the uterus retracts, the placental area is diminished, and abruption of the organ is favored; (4) prolapse of the cord is common, especially in flat pelves, and this is always a very serious affair for the child. As long as the bag of waters is intact these dangers hardly exist, but it would be wrong to say they never threaten the child, because I have seen death of the fetus occur by the above mechanisms with an intact amniotic sac.

"Injuries of the brain, of the cranium, and of the body of the child are very common. Many children die from cerebral compression without external injury, and not a few die from concussion of the brain from forceps or breech delivery. More often death is due to intracranial hemorrhage from skull fracture. This may be in the form of fissures radiating from the center of ossification of the flat bones toward the sutures of the skull. Many times cephalhematoma is due to such fissures, the clot in these instances being outside the skull, under the periosteum. Tears of the tentorium cerebelli also occur in difficult labors. Depressed skull fractures occur with forceps, but particularly with breech deliveries, and they look as if the bone had been pressed in with a spoon. They are sometimes attended by intracranial hemorrhage, and are then usually fatal.

"Caput succedaneum occurs in its greatest proportions in contracted pelves. It may be visible at the vulva while the head has not yet passed

the inlet. Since the caput succedaneum is due to the fact that the pressure inside the uterus is greater than that in the vagina, it indicates strong uterine action. It does not show that the head fits the inlet tightly, and it does not do much to aid in the dilatation of the cervix, as some writers state.

"In generally contracted pelves the caput, by lengthening the head wedge, may assist the labor, but little is thus accomplished. Of great clinical importance is the proper estimation of the caput, because if the scalp is visible at the vulva, the accoucheur may hastily conclude that the head is engaged and be misled into unfortunate operating, while in reality the head may be above the inlet. The caput also covers up the landmarks of the head and renders the diagnosis of position very difficult.

"Fractures of the clavicle, the humerus, and the femur and disruption of the vertebral column are almost invariably due to brute force, exhibited during operative delivery. The same may be said of tearing of the nerves of the cervical plexus—Erb's paralysis, etc. Fracture of the long bones and of the skull may, however, occur during spontaneous labor.

"The author is convinced that many children carry the effects of minor injuries received at birth all their lives. It stands to reason that the innumerable and thickly sown minute hemorrhages found in the brain after forceps and other hard deliveries must leave at least a fibrosis behind. These thickenings may explain cases of epilepsy, idiocy, paralysis, paresis, chronic headache, tic douloureux, retinal lesions, strabismus, and some other focal nerve diseases in later life." (De Lee)

It is therefore evident that before the onset of labor the obstetrician must determine whether there be a grave disproportion between the child and the pelvis. The history of the woman, the seasoned judgment of the accoucheur, and the pelvic measurements should afford sufficient data. Where the contraction of the pelvis offers diameters of about 3½ inches the cases are called border-line cases. Of course a very small foetus would throw such cases into the safe class.

In cases of absolutely contracted pelves, physicians who are not controlled by the ethical law deliberate between embryotomy and the Caesarean section. The law of God allows no such choice: the Caesarean section or expectant treatment are alone offered. With modern aseptic surgery the Caesarean section is less dangerous than embryotomy: it should be performed even in border-cases. It will usually deliver a healthy child instead of the dead child, or wretched being sketched by De Lee as the result of difficult labor.

"If the woman has been in active labor for a long time; if the membranes have been ruptured for many hours; if frequent internal examinations have been made, and by hands whose asepsis cannot be assured; if operative delivery has been attempted; if infection has begun or is suspected—certainly if the woman has fever or fetid discharge, Caesarean section from the relative indication is prohibited. If these conditions do not exist, but the case has come early into the hands of a man capable of his task, uninfected, and in suitable surroundings, the Caesarean section is the operation of election. In the first instance craniotomy is not alone justi-

fiable, but demanded, and in the second instance the accoucheur must recommend the abdominal delivery. The facts are to be laid before the patient, the husband, and the family, and they must decide. Naturally, the accoucheur should guide them in their decision, and if they do not agree with him, he should not be constrained to sacrifice the child when the conditions are ideal for Caesarean section. Nor should he, when convinced that the disproportion is too great, allow the woman to labor until the right time for the abdominal delivery has gone by. He is at liberty to retire from the case under either circumstance, but must first provide, or see that the family provides, other medical assistance.

"If craniotomy has to be performed because of pelvic contraction, the woman, the husband, and the family must be instructed that in the event of a subsequent pregnancy medical aid is to be provided early, and arrangements made for the Caesarean section under ideal conditions. The accoucheur should not be asked to perform craniotomy a second time on the same woman. Such an operation today is unjustifiable, owing to the perfection of obstetric art.

"An immense amount of literature has been accumulated on the question of the justifiability of craniotomy on the living child. In a paper published in 1901 (American Journal of Obstetrics, Vol. XLIV, No. 4) the author considered the subject in all its aspects, and has changed his opinions but little since.

"Kossmann, Mann, Leopold, Olshausen, Schauta, Chrobak, and Knapp have written exhaustively on it and reached the same general conclusions. The stand taken by the Catholic Church is well known. Under no circumstances may human life be deliberately taken even when it is done to save another life. In Catholic families, therefore, the accoucheur is in duty bound to consider this aspect of the case, and the author makes it an invariable rule to remind the patient and family of this view of the Church, and to ask that the family priest be summoned to aid in their deliberations.

"With few exceptions, all experienced writers are agreed that the sacrifice of the living child is still occasionally justifiable. The cases in which this is necessary are very scarce and becoming scarcer each year, there having been so much improvement in obstetric teaching and practice that severe dystocia is more often recognized early—in time for life-saving operations. In the last year or so the technic for extraperitoneal Caesarean section has been so much improved that in suspect cases it may, rarely, be employed to save the infant, and thus still further reduce the necessity of performing craniotomy. Neglected and unrecognized dystocia still occurs, mistaken and unsuccessful operations are still attempted, aseptic care of parturients is still not universal, and infection is still common, so that when the accoucheur finally has to complete the delivery, he is usually glad to be able to save one life. Again, a woman may absolutely refuse to endanger her own life for her child, and this she has a perfect right to do. On the other hand, the necessity of sacrificing a perfectly healthy child almost never arises. When the patient reaches this point the child has nearly always been injured by long labor, by attempts at de-

livery, by being infected or having inspired infected liquor amnii, and it very often dies within a few days, even, if delivered alive. Furthermore 30 per cent. of all children die before they are five years old. In comparing the life values of mother and child, these facts must be considered.

"Without doubt, in former years too many children were sacrificed and infantile life was held too cheaply. Nowadays we are saving a great many by means of Caesarean section and pubiotomy, but there is a tendency, as Chrobak observes, to go to the other extreme, and expose the mothers to greater dangers than the end justifies. As Chrobak says, 'it almost seems we must protect the mothers against the children and that we forget that *salus matris suprema lex.*' Since the vast majority of births occur, not in the large cities, where maternities and specialists are obtainable, but in towns, villages, and in the country, it will follow that many children will have to be sacrificed to save the mothers, and the accoucheur will deserve congratulations if, under trying circumstances and amid unfavorable conditions, he saves the mother. All accoucheurs, however, breathe one prayer—speed the day when craniotomy of the living child can be abolished!" (De Lee)

There is much that is good in this able presentation, but it fails in one particular: notwithstanding the most unfavorable conditions of the mother, the direct killing of the foetus can never be performed, because it is a human being with complete human personality and human rights. Agat natura aut sectio Caesarea perficiatur.

In extreme cases where it is evident that all the principals are in good faith and also evident that they may not be converted to the right view, the priest should not disturb the aforesaid good faith.

However, if he is directly interrogated by one of the interested principals he must give answer according to the decisions of the Catholic Church.

In the medical profession we find some members who make a practice of abortion. In the year 1904, Dr. Howard Evans of La Crosse, Wisc., declared that 50 per cent. of the doctors of the state were abortionists. Father Coppens quotes the following valuable testimony from the late Dr. Hodge of Philadelphia to the medical students of the University of Penn.:

"We blush while we record the fact that, in this country, in our cities and towns, in this city where literature, science, morality and Christianity are supposed to have so much influence, where all the domestic and social virtues are reported as being in full and delightful exercise even here individuals, male and female, exist who are continually imbruing their hands and consciences in the blood of unborn infants; yea, even medical men are to be found who, for some trifling pecuniary recompence, will poison the fountains of life, or forcibly induce labor, to the certain destruction of the fetus and not unfrequently of the parent.

"So low, gentlemen, is the moral sense of the community on this subject, so ignorant are the greater number of individuals, that even mothers, in many instances, shrink not from the commission of this crime, but will voluntarily destroy their own progeny, in violation of every natural sentiment and in opposition to the laws of God and man. Perhaps there are few individuals in extensive practice who have not had frequent applica-

tions made to them by the fathers and mothers of unborn infants (respectable and polite in their general appearance and manners) to destroy the fruit of illicit pleasure under the vain hope of preserving their reputation by this unnatural and guilty sacrifice.

"Married women, also, from the fear of labor, from indisposition to have the care, the expense, or the trouble of children, or some other notion equally trifling and degrading, have solicited that the embryo be destroyed by their medical attendant. And when such individuals are informed of the nature of the transaction, there is an expression of real or pretended surprise that any one should deem that act improper,—much more, guilty; nay, in spite of the solemn warnings of the physician, they will resort to the debased and murderous charlatan, who, for a piece of silver, will annihilate the life of the fetus, and endanger even that of its ignorant or guilty mother.

"This low estimate of the importance of fetal life is by no means restricted to the ignorant or to the lower classes of society. Educated, refined and fashionable women, yea, in many instances, women whose lives are in other respects without reproach, mothers who are devoted with an ardent and self-denying affection to the children who already constitute the family, are perfectly indifferent concerning the fetus in utero. They seem not to realize that the being within them is indeed *animate*, that it is in verity a *human* being, body and spirit; that it is of importance; that its value is inestimable, having reference to this world and the next. Hence, they in every way neglect its interests. They eat and drink, they walk and ride, they will practice no self-restraint, but will indulge every caprice, every passion, utterly regardless of the unseen, unloved embryo.

"These facts are horrible, but they are too frequent and too true; often, very often, must all the eloquence and all the authority of the practitioner be employed; often he must, as it were, grasp the conscience of his weak and erring patient, and let her know in language not to be misunderstood, that she is responsible to her Creator for the life of the being within her."

Then there are physicians who will not perform what in medical circles is termed a criminal abortion, but who feel justified in performing what they term a therapeutic abortion. In this class, some perform such operation readily; others employ it as a last resort.

At the 58th Annual Meeting of the State Medical Society of Wisconsin, at Milwaukee, June 22, 1904, Dr. C. O. Thienhaus of Milwaukee declared:

"The country doctor, far away from surgical help, is called to confine a woman in a small, filthy house, in which even the experienced surgeon would hesitate to perform a Caesarean section. On his arrival he finds the child in a transverse position, the contraction ring of the uterus ascending up to the navel, a sign which you know warns him that rupture of the uterus is imminent, the child, however, contrary to his expectations, still living. Ought he not to do a craniotomy, knowing that an attempt at version of the living child would be followed by a rupture of the uterus and death? Have we not been taught in our schools and from the first

clinics of the world, that because of the imminent danger of the rupture of the uterus, craniotomy must be performed regardless of the life of the child, under such conditions?

"Certainly when that golden age has arrived when all physicians can do Caesarean section under the most filthy conditions, without any assistance, with zero per cent. of mortality for both mother and child, then we will take our craniotomy instruments from our obstetrical bags or use them only for dead children. But so long as Caesarean section done by the general practitioner who does not operate a dozen laparotomies each week and carry with him trained assistants and nurses in every case, would mean for the mother 99 per cent. of deaths, so long craniotomy on the living child must stand."

This is specious but it does not override the great principle that the life of an innocent human being can not be sacrificed for any cause.

"If a man be desperately assaulted, and in peril of death, and cannot otherwise escape except by killing an innocent person then present, the act will not acquit him of murder, for he ought rather to die himself than kill an innocent one." (Lord Chief Justice Hale of England)

The only way that the abortionist may escape this principle of the divine natural law is to deny that the fetus is a human individual. This is against biology, theology, and statute law.

I am indebted to Father Coppens for a report of a decision rendered by Lord Chief Justice Coleridge of England in the following case:

"On July 5th, 1884, the yacht Mignonette was lost at sea, and a part of the crew were cast away in an open boat. After they had been seventeen days without food, and five days without water, Dudley and Stevens, the prisoners, decided to kill a boy who lay helpless in the bottom of the boat. They argued that as they had families, their lives were of more value than his. Brooks, one of the crew, objected, but in spite of his protests, Dudley went to the boy, who was too weak to offer any resistance, and telling him that his time had come, cut his throat. They lived four days on his flesh and were then rescued by a passing vessel and taken to England, where Dudley and Stevens were tried for murder. The defense showed that if they had not sacrificed one life, all would have died from exhaustion. In spite of an able defense, they were convicted of murder and sentenced to hang."

The great Pinard of Paris and Dr. James Murphy of the University of Durham never performed a craniotomy on a living child. They declare it unnecessary.

In the circumstances mentioned by Dr. Thienhaus there would be as much danger in the operation of craniotomy as there is in the Caesarean section. A man should not not offer himself as an accoucheur who is incompetent to perform a Caesarean section.

Hyperemesis gravidarum, the pernicious vomiting of pregnancy, is much dreaded by physicians. It is responsible for many therapeutic abortions. The vomiting may be due to hysteria. This will yield to psychotherapy, removal of depressing influences, stimulation of the eliminative organs, and careful feeding. The prognosis is good.

In acute toxemia with pernicious nausea, the colon should be frequently flushed with normal salt solution. A gastric lavage of the stomach with warm solution of bicarbonate of sodium is indicated. The patient should be nourished by nutrient enemata by bowel. Peptonized milk, panopepton, raw eggs, and brandy or whisky should thus be given. The woman should be kept warm by hot water bottles and blankets; she should be put at rest with plenty of pure air. As soon as the stomach will retain food, she may be given often in small quantities peptonized milk, orange juice, juice of grapefruit, limes, lemons, and pineapples, beef juice, and brandy. Most cases yield to this systematic treatment.

"The sympathetic phenomena of pregnancy are often more alarming in appearance than in reality and will rarely justify any interference with the natural progress of gestation." (Wharton and Stillé: Medical Jurisprudence)

In moderately contracted pelves watchful expectancy should be employed to see what nature may accomplish. An extraordinary degree of watchfulness is demanded. Most cases favorably develop. But if the watchful accoucheur observes that the disproportion is insurmountable, then the Caesarean section is to be performed, before the vain attempt of labor has complicated the aforesaid operation. When necessary, premature labor is allowed when the foetus is sufficiently developed for extrauterine existence.

Before the thirty-first week the child has a poor chance to live outside the maternal body. Better await the thirty-fourth week.

In the case of moderately contracted pelves where delivery, though slow and difficult, is believed possible, the Walcher position is highly endorsed. The gravida's pelvis is brought to the very edge of the bed or operating table; the legs are dropped down onto a pillow. The legs should be warmly draped. This dropping of the legs with the sacrum fixed lengthens the conjugate diameter and enlarges the inlet. The position causes such pain to the woman that some obstetricians discard it.

If the second stage of labor lasts much more than five hours, De Lee advises an operation. We must exclude from the list craniotomy: non licet. Version, forceps, hebosteotomy, or extraperitoneal Caesarean section are offered. The choice should favor the last named. The forceps are well named by De Lee, the "brutal" instrument. In all cases mother or babe or both suffer. The instrument fails in many cases. When the instrument is used before the largest circumference of the fetal head has passed the region of the pelvic inlet the fetal mortality is from 15 to 40 per cent. From 2 to 4 per cent. of the mothers die. Such use of the forceps is called "high forceps."

What is here said of high forceps applies not to forceps applied to assist nature in the second stage of labor after the head is engaged in the inlet of the pelvis. At the same time De Lee calls attention to the instrument's "murderous possibilities."

A contracted pelvis is a contraindication for forceps: it is an indication for timely Caesarean section unless the foetus be very small.

Fig. 115—Beginning median laceration of Perineum, during labor. (Lewis and De Roulet)

Very often in a forceps delivery and occasionally in a normal delivery the perineum tears as the head is forced through the vulvar opening. To prevent this ragged laceration the simple operation of episiotomy should be performed.

The commonest and least dangerous use of the forceps is to deliver the head in the last act of the second stage of labor. The head is in the outlet of the pelvis or has passed it and may be easily grasped.

The forceps even in the most favorable conditions will in some degree tear the mother's pelvic organs. They also are liable to cause infection

and hemorrhage. The dangers increase as the forceps are thrust higher into the parturient canal. Forceps have torn the vagina, ruptured the sacro-iliac articulations, torn the bladder, distorted the bladder sphincter causing incontinence of urine, and wrought permanent injury to the pelvic floor.

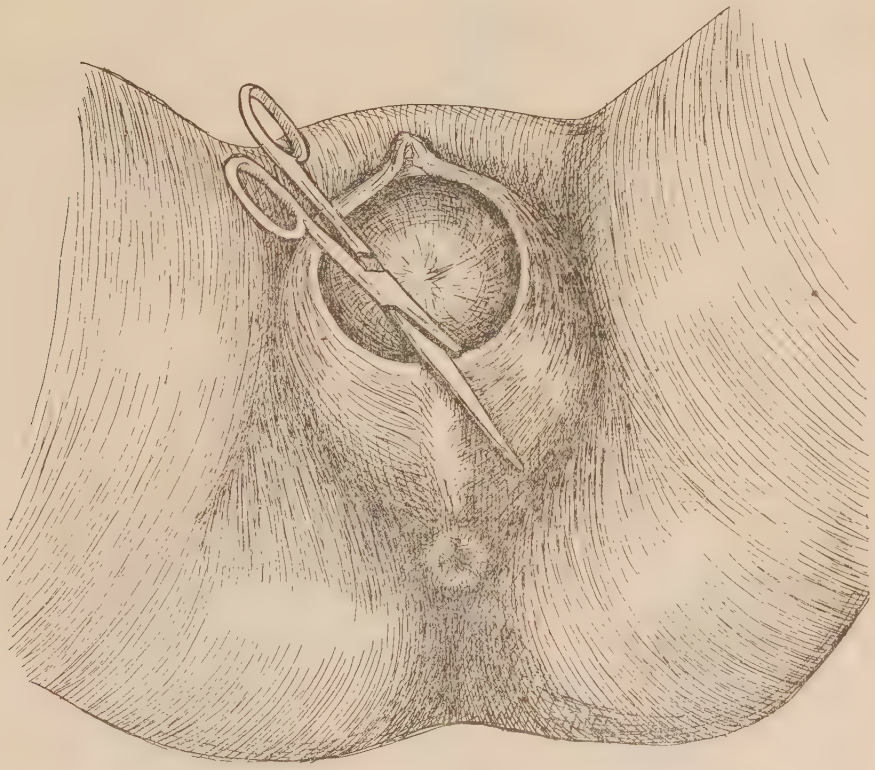

Fig. 116—Operation of Episiotomy. (De Lee)

Forceps have often acted as a cranioclast on the fetal head; in other cases caused asphyxia, concussion of the brain, injury to the eyes, and general injuries to every part of the body. The slipping of the forceps is most dangerous to mother and child.

The best obstetric practice reduces the use of the forceps to a minimum. In 95,025 deliveries in eighteen German Maternity Hospitals the average forceps delivery was 4.5 per cent. Some of these forceps deliveries were demonstrations to medical students.

Both face and brow presentation are pathologic: they increase fetal mortality. Brow presentation is the more dreaded. Expectant treatment is recommended until it becomes evident that nature shall not effect a delivery. Version and, if necessary, forceps are then employed. Every reasonable effort should be made to convert the presentation into an occipital presentation and then to allow nature to act. Pubiotomy may be effective. The Caesarean section should be done whenever possible.

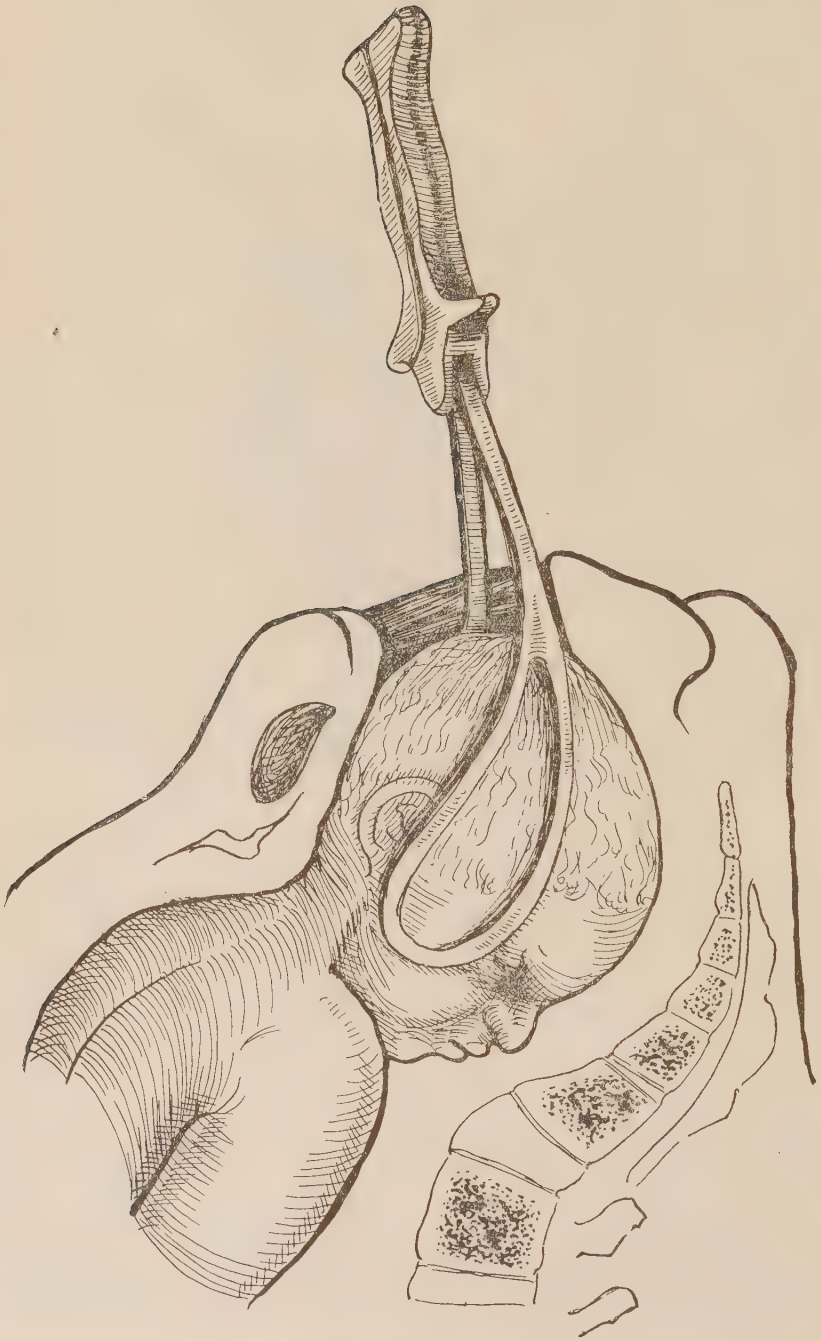

Fig. 117—Forceps lying in their most favorable position. (De Lee)

The great danger of brow presentation lies in the fact that it brings the occipito-mental or maximum diameter of the fetal head in relation with the diameters of the pelvis. This establishes a disproportion. Rotation and descent become impossible.

Death of the foetus by the impaction, and exhaustion and infection of the mother soon result.

In obstinate impaction some obstetricians assert that the foetus will certainly die: they advise therefore to disregard its life in order to save the mother.

This principle is unlawful. If the Caesarean section be impossible, there remain nature, forceps, and version. Many face presentations terminate spontaneously and successfully. The skilful use of the forceps is often helpful. Unless the disproportion be absolute, podalic version may

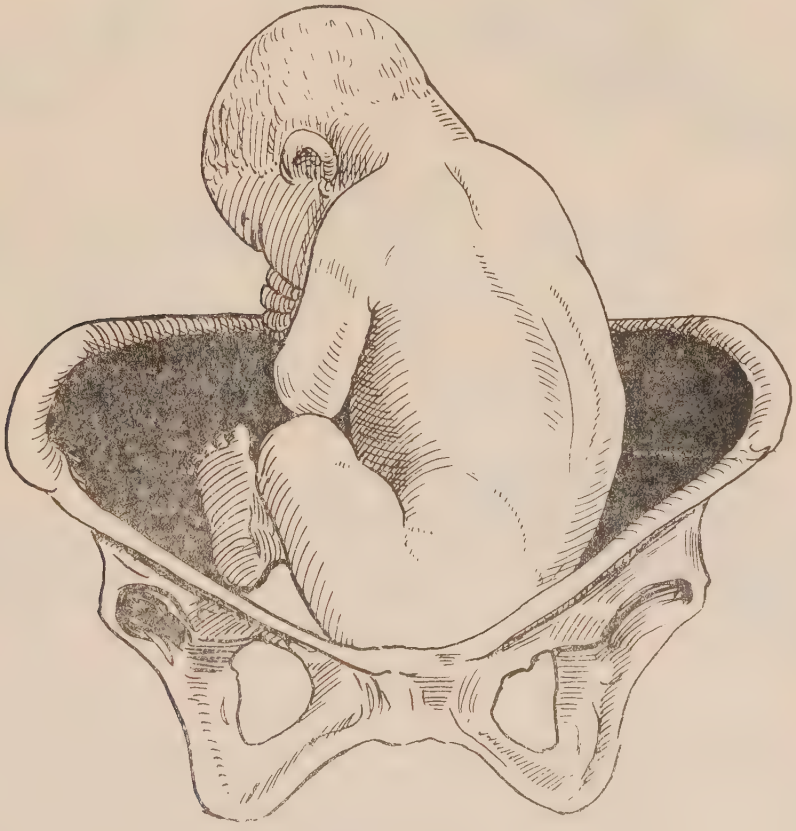

Fig. 118—Breech Presentation. (De Lee)

be attempted. For this operation a complete or partial anaesthetic is administered. The operation consists in pushing back the head from the pelvic brim, and in drawing down the feet and legs to deliver them first. After the feet emerge nature may complete the delivery. If nature fails,

gentle traction is employed with forceps on the aftercoming head if necessary. Lacerations are inevitable and severe accidents to the child are many.

Fig. 119—Delivery of Breech. (De Lee)

In about three per cent. of deliveries the foetus presents his breech. Some obstetricians do not consider this pathologic. It seems however to complicate labor and to increase its mortality. The child is liable to asphyxia and injuries to skull, neck and spine. It must however be acknowledged that most breech presentations terminate favorably by the natural processes of labor or with the help of obstetrical science.

One of the most serious anomalies of the foetus is *transverse presentation.*

The labor may have begun as a vertex presentation, but the vertex lodges in its descent at the side of the pelvis. The labor pressure forces the trunk across the inlet; usually the shoulder presents itself at the pelvic brim: the arm may prolapse into the vagina. If an ignorant accoucheur pulls this arm he wedges the shoulders in the pelvic brim through which in such posture they can not pass. Fetal death usually early occurs through birth pressure and prolapse and compression of the cord.

"Version, not expectancy, is the treatment of transverse presentations. The child must be brought into a longitudinal presentation—it must be turned. During pregnancy version by posture is tried, and the woman should, when abed, lie on the side to which the head points. Sometimes the breech will sag over to this side, forcing the head over the inlet. Examination at the end of three weeks may show a longitudinal presentation, when a binder, with pads on each side, may be applied, though success is not constant. The French recommend a girdle, or '*ceinture eutocique*,' for this purpose, and the Japanese use daily massage and kneading to keep the fetus straight. During pregnancy cephalic version is preferred.

"During early labor version by posture may be tried, but it is better to aid gravity by external manipulation. By gently leading the head over

the inlet and pulling the breech up into the fundus much may be accomplished. Each manipulation is executed between pains, and when the uterus contracts, the hands hold what has been gained. An anesthetic may be advantageous and advisable. Many cases will be met where the head or the breech has only slid off into the iliac fossa, and for these, external manipulation almost always suffices. Wiegand's method of version consists in placing one hand over the breech, the other over the head, and, with alternate pushing and stroking movements, striving to bring the head down over the inlet.

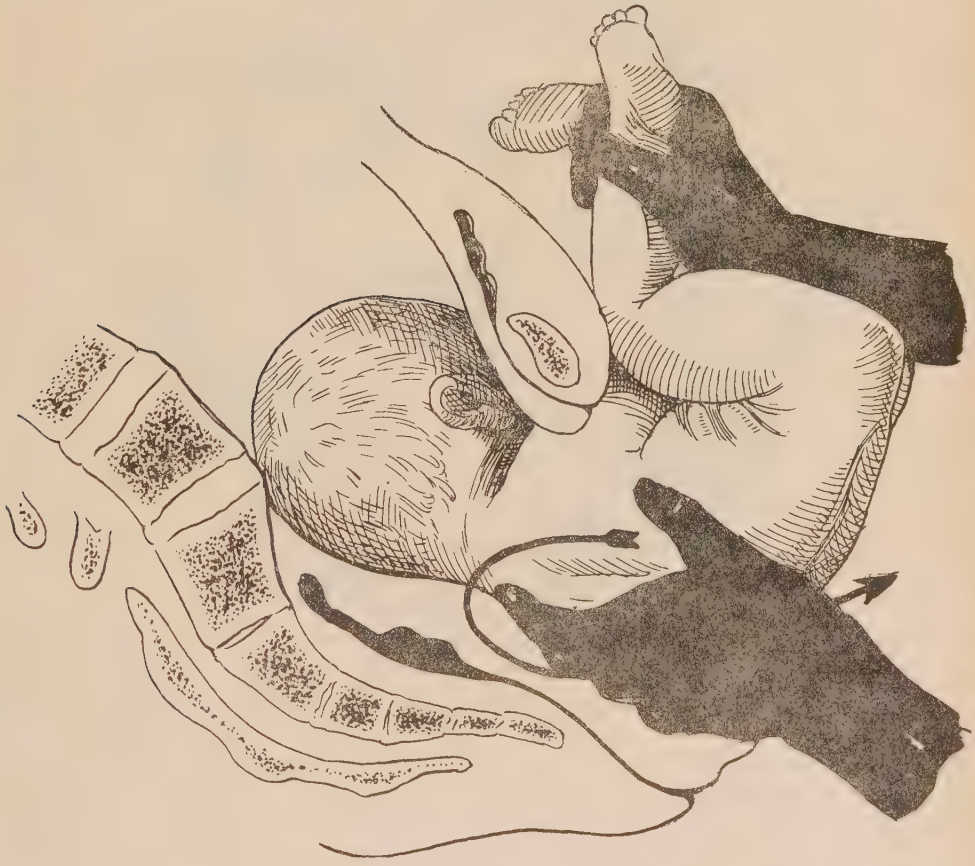

Fig. 120—Delivery of Posterior Arm and Shoulder. (De Lee)

"Version during early labor means cephalic version, but there are three conditions which govern the operation: (1) There may exist no immediate nor prospective indication for the rapid termination of labor; (2) the fetus must possess a high degree of mobility, the pains being weak and few, and the bag of waters intact; (3) there may not be too great a degree of pelvic contraction. Version by external manipulation, thus governed, should be persisted in until the second stage of labor is on, when, if it has failed, more definite treatment is to be instituted.

"The most unwelcome accident in shoulder cases is the rupture of the membranes before the cervix is completely dilated. As has been shown, conditions are particularly favorable for it. The accoucheur seeks to avoid or delay the rupture of the bag of waters by keeping the patient on the side, that one on which the head lay,—by forbidding her to bear

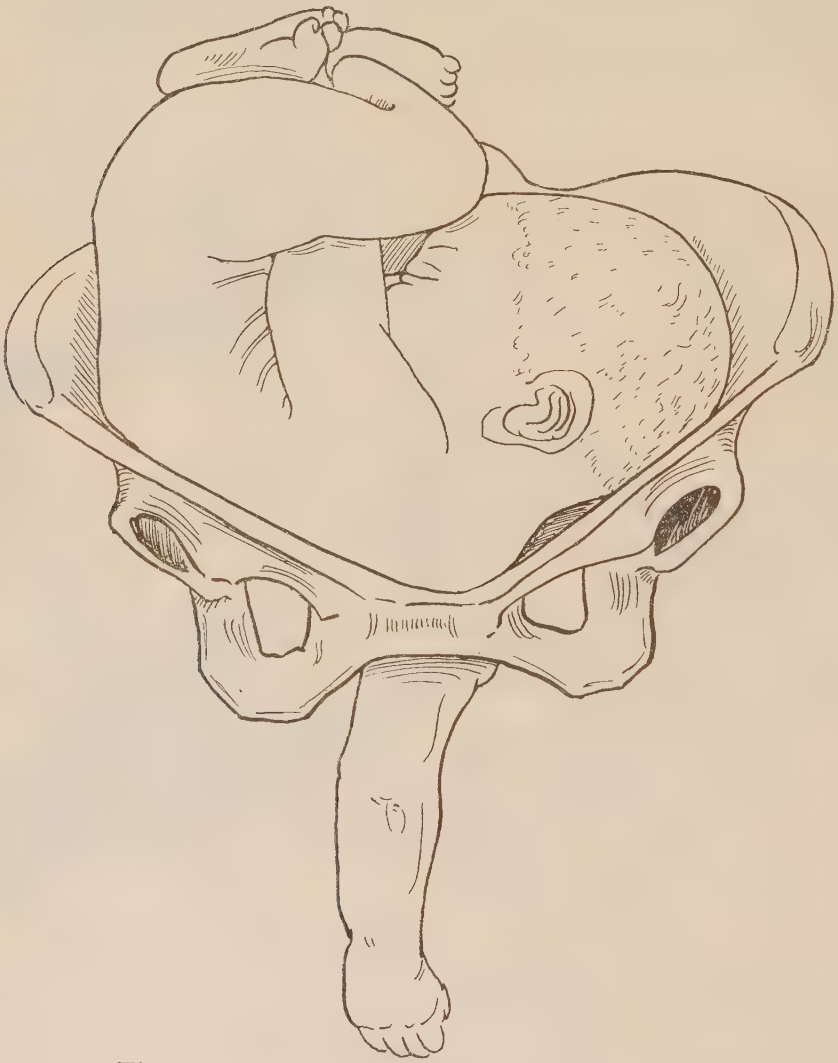

Fig. 121—Shoulder Presentation. (De Lee)

down with the pains, and, best of all, by placing a Braun soft-rubber colpeurynter in the vagina and filling it nearly full of solution. This exerts counterpressure on the membranes, and also prevents the shoulder from wedging into the pelvis. After complete dilatation of the cervix has been achieved a great deal has been accomplished, and the question now

arises, which shall be done, cephalic or podalic version? Without doubt the child's chances are best in head-first deliveries, and the attendant will do well to consider the advisability of cephalic version, although few authors recommend it, and it is very rarely performed in practice. Generally, the foot is brought down, with a view to, with one stroke, both correcting the malpresentation and obtaining a good purchase on the child, so that

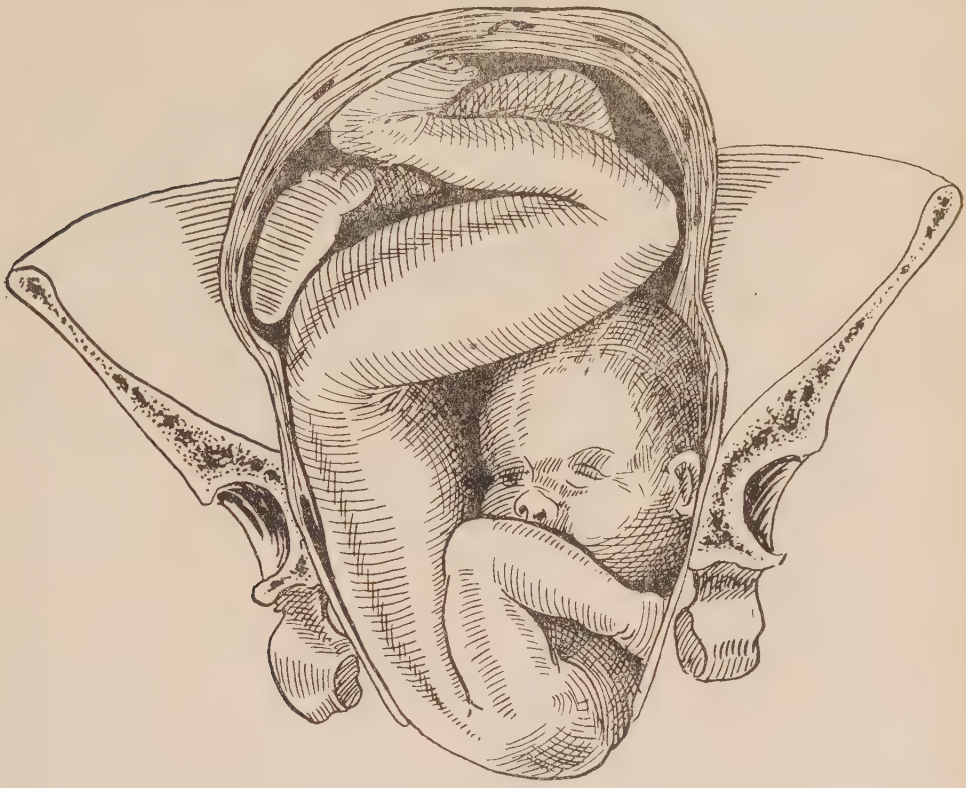

Fig. 122—Labor in Conduplicato Corpore. (De Lee)

its delivery can be effected at will. In the cases now cited Wright's method of cephalic version would almost certainly lead to success, and it is to be recommended for trial. Should it fail or prove too hazardous, or should the cord prolapse, as occurred once to me, the attempt is to be given up, and without withdrawing the hand a foot grasped and podalic version performed. Should the first attempt succeed, the head is to be led into the pelvis or drawn down with long forceps, held in proper position for a few uterine contractions, and *the case then left to nature*, or subject to a new indication demanding extraction. The procedure just detailed would be most desirable in primiparae, but, unfortunately, it is this class of patients which present the greatest resistance to intra-uterine manoeuvers, especially those which would change the location of the fetus.

"Transverse presentation cases seldom come for treatment under the favorable conditions thus far considered. Usually the bag of waters has

ruptured, the os is imperfectly dilated, the shoulder wedged more or less deeply into the pelvis, and the uterus retracted on the child. Truly neglected cases, with tetanus uteri, are nowadays, and certainly in Chicago, exceedingly rare. Since the rupture of the membranes has deprived the uterus of its best means of procuring sufficient dilation of the os, nothing is more rational than to try to substitute the bag of waters. This is very successfully accomplished by the colpeurynter, and this useful instrument should be applied in all cases of shoulder presentation where the bag of waters has ruptured and the cervix has not opened sufficiently for the introduction of the hand. For such cases Braxton Hicks' method of bipolar version (combined manipulation by two fingers inserted through the os, assisted by the outside hand) has been recommended. In the author's experience the operation is very difficult and often impossible when the uterus has lost the liquor amnii, while, besides the cord may prolapse, the placenta may be detached, or some other indication arise for immediate delivery. This indication could not be met because the cervix is not dilated. It is, therefore, better to apply a colpeurynter inside the uterus, resting against the cervix. As a rule, the pains now improve, becoming more regular and effective; what liquid remained in the uterus is prevented from escaping, the shoulder cannot wedge itself further in the pelvis, and the cervix is dilated by a fluid wedge much resembling the bag of waters. If 10 ounces of solution are injected into the metreurynter, it will measure about 9 cm. across, and in passing through the cervix will be compressed to about 8 cm. But this size opening is sufficiently large to allow the hand to pass through, and now version proper, with the whole hand in the uterus, may be performed.

"It is dangerous to wait in these cases for the pains to dilate the cervix for the introduction of the hand, because the labor will become a 'neglected' one under the very eyes of the accoucheur. If, on the arrival of the attendant, the cervix will admit the hand, version is immediately performed, and, usually, by the breech. Cephalic version is likely to be unsuccessful in these late cases, and, too, often, an indication for delivery coexists with that for version; further, a slight degree of pelvic contraction may determine the choice of method, and finally the operator may not have had sufficient experience with Wright's operation. A point of immense practical importance is that after version has been performed the indication for the operation has been satisfied and the accoucheur should study the case carefully to see if anything in the mother or child creates a new indication for the extraction of the child. In other words, the operations of version and extraction must be separated, unless, at the same time, indications exist for both. Since the operation of version, by separating the placenta or causing entanglement of the cord, may create an indication for delivery, it is advisable to begin the version only after complete dilatation of the cervix has been procured.

"Neglected shoulder presentations, especially those where one of the modes of spontaneous expulsion is in progress, present truly intricate situations for the accoucheur to solve. The tetanically contracted uterus may foil every attempt at version, even in profound anesthesia, and to force it

would inevitably cause a rupture of the organ. The stretched vagina, tightly filled with the large bulk of the presenting part, may not permit the fingers to gain access to the uterine cavity. The child may lie in the dilated lower uterine segment, which may be so thinned that the introduction of the hand may rupture it, or the uterus will tear when the woman's position is changed—and the tear may have already begun. No consideration need be given the child in this class of cases because it

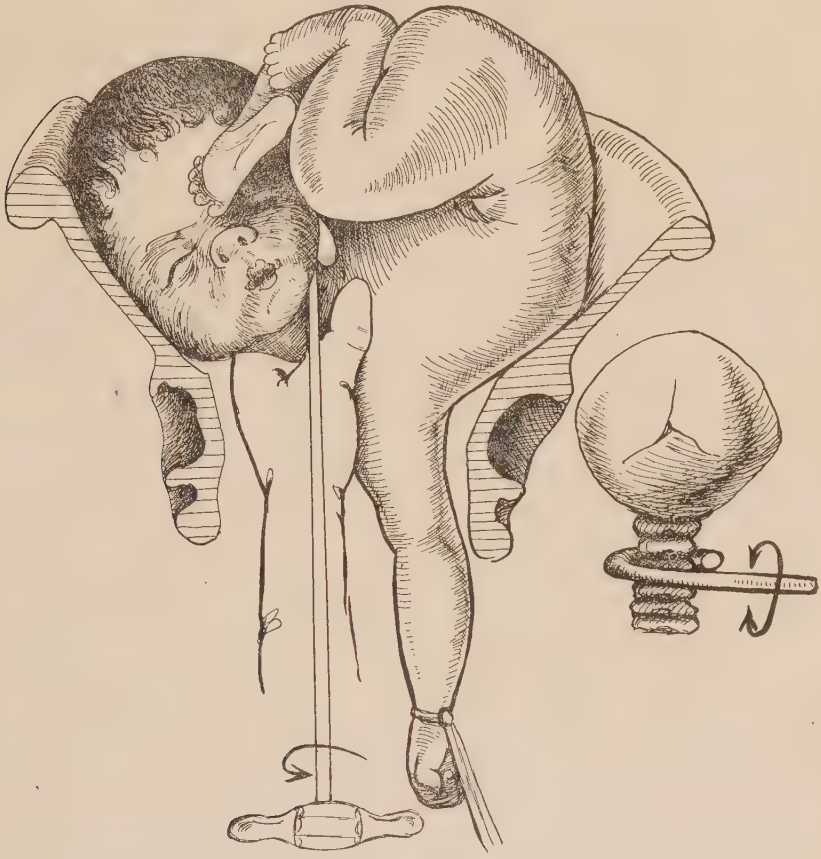

Fig. 123—Decapitating with Jardine's Hook. (De Lee)

almost invariably has long succumbed. Decapitation and exenteration are operations of choice. If the neck is within easy reach, decapitation by means of Carl Braun's hook may be done, but the author prefers the operation of exenteration. Even the most skillful accoucheur in performing a decapitation will twist the head against the thinned uterine segment and precipitate its rupture, while by exenterating the fetus it can be delivered without subjecting the uterus to any additional strain. If the chest of the child is wedged deeply into the pelvis, the accoucheur will find the neck stretched up above the inlet on one side, and the spinal column on the other, but almost parallel to the axis of the pelvis, and, of course, not so

placed that a hook introduced from the vagina could operate at a right angle to them. Here exenteration is the operation of necessity. Should the accoucheur observe that nature herself is terminating the case in one of the three modes described, he may, though it is contrary to most teachings, exert tentative traction on that part of the fetus which seems to advance most, or at least seek to aid that mechanism which is occurring under his eyes.

"Prolapse of the arm is not a complication of shoulder presentation. It does not interfere with any treatment. It is wise to put a sling on the wrist, and lay the end, sterile, over one groin. The arm need not be replaced in the uterus, nor should it be amputated under any circumstances. A physician amputated both arms of a presumably dead child and delivered it later alive!

"What shall be done in neglected transverse presentations when version is impossible or too hazardous and the child still alive? From the nature of the case, Caesarean section is contraindicated, because it jeopardizes the mother too much, and the child, though living, at the time of delivery, in the majority of cases dies soon after from the effects of the compression. In the author's opinion, embryotomy should be done. While it sacrifices what little life the child has and is a painful task to the accoucheur, it offers the mother the greatest safety." (De Lee)

A colpeurynter, or more correctly a metreurynter, sometimes called hystereurynter, is a hydrostatic bag first invented in 1851 by Carl Braun. It is introduced empty into the uterus and then filled with lysol solution to dilate the uterus.

Of course it must be sterilized.

Everything that touches the gravida should be sterilized. The antepartum bath should not be a tub bath, as the bath water may enter the vagina. A shower or sponge bath should be given. The pudendal region should be thoroughly cleansed with warm water and then sponged with a solution of 1 :500 bichlorid of mercury. The night-dress and stockings should be sterilized. The accoucheur should be dressed in clean, sterilized operating gown. His nails should be pared, all subungual dirt gently removed, hands should be scrubbed in very warm water for five minutes, then immersed in solution of 95 per cent. alcohol, and finally soaked in solution of bichlorid of mercury, or hot saturated solution of potassium permanganate or of oxalic acid. He should always wear sterilized rubber gloves.

If the confinement must be at home the room should be cleared of all dust-accumulators. The mattress should be hard; a rubber cloth should cover it. Newspapers may take the place of the rubber cloth in the homes of the poor. They are sterilized by baking in the oven.

When the confinement is in the home of the gravida the house should be provided with:

Two glass drinking-tubes.
Three granite-ware hand-basins.
One quart pure grain alcohol.
A two-quart douche-bag.

Two half-pound cans of ether.
One or two good bed-pans.
Eight ounces tincture of green soap.
One piece of rubber sheeting large enough to cover the bed and another piece a yard square to lay under the woman's pelvis.
Twenty yards of bleached gauze or dairy cloth.
Two pounds of sterile absorbent cotton.
A quart of pure olive oil, a half-pound of pure lard or albolene.
Five yards borated gauze in sealed jar.
One hundred bichlorid of mercury tablets.
One two-quart fountain syringe.
Four ounces of boric-acid crystals.
Two or three hot-water bottles.
Four ounces of Lysol.
Six yards unbleached cotton for binders.
Some clean newspapers.
Plenty hot water.
A paper of safety-pins.
A jar or bucket.
Two pitchers.
A quantity of bed linen and night dresses and stockings.

"The essential items in this list are: absorbent cotton, basins, bedpan, rubber sheeting, and bed-pads to cover the bed. The delivery pads can be made from eight to ten thicknesses of newspaper with muslin or cheese-cloth tacked over the newspapers. As one is soiled it is replaced by a new one. Three or four are sufficient. The pads that are used after the delivery are made from absorbent cotton covered with cheese-cloth and either done up in packages of three or four or put into a pillow case, and then baked. This, of course, does not give absolutely sterile pads for use after the delivery. In many parts of the country the Visiting Nurse Association have the pads sterilized at their central offices and sell them to the prospective mothers for a nominal sum. If the patients are unable to obtain these sterilized pads, the nurses will show them how to make the pads and do them up, so that they can be relatively sterile.

"If this list is not essential, why do we ask for it? It is perfectly true that many deliveries can be successfully accomplished without any such list, but the articles in this list do add much to the comfort of the patient. There are two things to be considered in every delivery; first, the safety of the patient, and second, her comfort. The safety of the patient depends upon the careful supervision of the patient throughout her pregnancy, as outlined in the 'Hygiene of Pregnancy,' and upon the delivery being accomplished in an aseptic, clean manner so that the patient does not become infected. It has been shown by many series of statistics that thousands of women die each year, as a result of childbirth, from sepsis, which is the medical term for blood-poisoning. It has further been shown that practically all of these cases die from infection carried from outside to the patient, either by unclean surroundings, or by unclean, careless vaginal examinations and unclean operating. If we can safeguard these thousands

of women by insisting that they have adequate care at the time of delivery, we can do much to lower our maternal death-rate.

"To overcome the lack of sterile supplies, there has been developed a system for the putting up of sterile packages containing the necessary pads, bed-pads, sheets, and towels. The expense of these outfits is considerable. If it is known that they are sterilized by a reputable concern and put up in a proper manner, they are most satisfactory. Too much reliance must not be put on the absolute sterility of these supplies when they are obtained from department stores. How long they have been in stock, no one knows. If such outfits are to be bought, they should be obtained from well-known and reliable surgical-supply houses and not from department stores." (R. L. DeNormandie of Harvard University)

All depressing influences should be kept from the parturient.

In transverse presentations unless version be diagnosed as easy the Caesarean section is preferable. This operation has gained ground but should come more into obstetric practice. It is not true that it be contraindicated after efforts have been made to deliver through the vagina. Surely Caesarean section is better when operated before fruitless labor has exhausted the woman and exposed her to infection. I have seen successful Caesarean sections performed on parturients who had been for several hours in labor. If the alternative be the death of the foetus the section should always be advised. When the child is living and in good condition timely Caesarean section is best for mother and child.

Even a dead foetus is often best removed by Caesarean section.

The nonchalance with which a materialistic ars obstetrica offers embryotomy of the living foetus as a lawful operation is a disgrace to medical science. It is the cheap refuge of mediocrity and crime.

Some authorities consider twin pregnancy as pathological.

The number of children possible at a single birth has not been determined. In the annals of Holland it is found that Countess Margaret, daughter of Florent IV., Earl of Holland, wife of Count Hermann of Henneberg, on Good Friday, 1278, at the age of 42 brought forth at one birth 182 male infants, 182 females, and one hermaphrodite. The multiple births were said to be due to the curse of a poor beggar woman who, being repulsed and insulted, prayed that the Countess might have at one birth as many babes as there are days in the year. The account is an impossible fable.

The serious Polish historian Martin Cromerus asserts that a noble woman named Margaret, wife of Count Virboslaus, on Jan. 20, 1296, gave birth to 36 living children.

Veit reviewed 13,000,000 births, in Prussia. According to his deductions twins occur once in 88 births; triplets once in 7910 births; quadruplets once in 371,126 births. Authentic records of 5 and 6 births in a single pregnancy are extremely rare. There were 72 cases of quadruplets recorded in the Surgeon General's Library, U. S. A., up to 1880: there were 19 cases of quintuplets.

Sextuplets are extremely rare: two authentic cases are recorded in the United States.

In the Boston Medical and Surgical Journal it is recorded that Mrs. Timothy Bradlee of Ohio, in 1872, gave birth to octoplets. The children were live healthy infants. She herself was a triplet, and multiple births was a characteristic of her line of ancestry.

In the Collection Academique, Paris et Dijon, 1755-79, Seiquette reports the simultaneous birth of nine children. Pico della Mirandola declares that Dorothea, an Italian, bore 20 at 2 confinements. Her first delivery brought forth 9; the second, 11.

According to Le Brun (Dict. des Sciences Med. IV, 138) Gilles de Trazegines, constable of France, who accompanied Louis to Palestine was one of thirteen children born at one birth.

Dianora Frescobaldi of the 16th century had 52 children. She never had less than 3 at a confinement. Hester Curtis, murdered at an advanced age in Lafayette, Ind., in 1895, was the mother of 25 children, of whom 7 pairs were twins.

Guzzoni, who studied 50,000,000 births, found that quadruplets occur once in 757,000 births; quintuplets, once in 41,600,000.

Vassali reports an authentic case of sextuplets at Lake Lugano.

The possibilities of paternity in the male far surpass those of the female.

Luigi Erba, an Italian of Perugia, retired to Polynesia and established a harem there of women of different races. He is said to have sired 370 children.

"The frequency of multiple pregnancy varies with the fertility of the people (Peuch, 1873) and the fertility varies in different countries and at different periods; thus in Ireland and Russia twin births are commoner than in France, where the birth-rate is low.

"Multiparae, especially those giving birth frequently, are more likely to have twins, and the probability increases after the age of thirty-three years in both parents. A hereditary disposition is certain, and the tendency, while usually transmitted by the mother, may also be given through the father. It is also noted in the lower uniparous animals, for example, the cow (Duncan). Marriage of twins increases the potency of the hereditary impulse. Twins and triplets are likely to be repeated in the same family. Cases of unusual fertility are not rare. Geisler tells of a woman physician (Mary Austin) who, in thirty-three years' wedlock, had 13 twins and 6 triplet births, a total of 44 children, her sisters having 41 and 26 children respectively (Strassman). Sue tells of a Parisian whose wife bore him 21 children in seven years, and who seduced a servant, who then delivered triplets. (See Neugebauer.)

"*Causation.*—Generally, two kinds of twins are distinguished, those coming from separate and distinct ova and those from one ovum. Two eggs escaping from an ovary at the same time may be fertilized and develop synchronously in the uterus. These eggs may even come out of the same Graafian follicle, since such follicles, and even some containing three eggs, have frequently been seen. Each ovary may furnish one of the ova. When two or more separate ova locate in the uterus, we have distinct ovular formations developing side by side. If the ova locate far from each

other, two distinct placentas develop; if near each other, the two placentas fuse, but their circulations do not. Since in such cases each child has its own amnion and chorion, where the membranes lie apposed a septum will be found made up of four layers—an amnion and chorion for each fetus. Occasionally decidual remnants will be found in the septum, the relics of the deciduae capsulares or reflexae of the early stages of the development of the ova. Theoretically, one might insist on finding six layers in the septum of double ovum twins—two deciduae, two chorions, and two amnions.

"The etiology of twins from one ovum, called homologous, or monochorionic, is still a mystery. Aristotle knew that two embryos could come from an egg with two yolks, and three embryos have been found in one egg. Two nuclei have been found in one yolk, and Kölliker, Stöckel, and von Franque found double germinal vesicles in the human egg. If such an ovum is to be fertilized, two polar bodies must first be extruded, and two spermatozoids are needed for fertilization, which theoretically is not impossible, but then we would have two chorions developed and the findings would be the same as if two different eggs had been impregnated. Perhaps we shall learn hereafter that such an occurrence has been proved. Another theory is that on one germinal vesicle two primitive streaks develop, that is, double gastrulation occurs. Two spermatozoids entering the ovum probably cannot produce this condition, because ova fertilized in this way usually die.

"If the two embryonal spots develop close to each other, it is possible that one amnion will inclose the two fetuses; if far from each other, each fetus will have a separate amnion. The older writers held that always two amnions developed, but that the septum atrophied and disappeared. Only about 40 cases are on record of twins without a septum between the two sacs, that is lying in one amniotic cavity. Should the separation of the two embryonal areas be incomplete, a double monster will result (Sobotta); therefore, according to the theory that homologous twins are the result of the fission of the embryonal area into two parts, and their separate development into fully formed fetuses, we must conclude that double monsters, like the Siamese twins, are the result of incomplete fission and not of fusion. A monster with four legs would mean fission at the lower pole, and one with two heads fission at the cephalic pole of the embryonal area. It is regretable that we have little scientific foundation for these plausible theories.

"*Characteristics.*—The placenta in unioval twins is always single; there are usually two cords, but rarely only one, which bifurcates near the fetuses, and these are monoamniotic ova; the blood-vessels anastomose on the surface of the placenta, and also in the villi themselves, producing a third or intermediate circulation between the twins. The septum of the placenta never shows traces of decidua, and only two layers, the two amnions, can be found in it. The children are said to be very much alike in size and in mental and physical characteristics, but the author has not found this to be constant. Unioval twins are rare, Ahlfeld in 1157 cases finding only 15.55 per cent.

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"Triplets and even quadruplets may come all from one ovum, but usually two ova are concerned, one of which may bring forth two fetuses.

"In length and weight twins usually differ more or less, 4 cm. and 200 gm, being the limits respectively. Twins are usually smaller than single children, but the combined weight is greater. The same proportion of boys and girls obtains with twins as in general. Twins from one ovum are smaller than those from two, and the difference in weight is not so great; also they have a higher mortality and are often deformed. The same deformity often exists in both twins, as in one of the author's cases, double harelip, and one of C. E. Black, rudimentary colon. It is said the tendency to this form of twins is not hereditary (Strassman). Eclampsia is more common with unioval twins. Homologous twins are always of the same sex. The two circulations anastomose in the common placenta, artery to artery, vein to vein, and artery to vein through the third circulation, the intercommunicating villus tree. The anastomosis of the two blood systems was known to Portal, who, therefore, advised the tying of the cord of the first child delivered to prevent the other from bleeding through the open vessels. As a result of this arrangement many anomalies arise out of the unequal distribution and size of the placental vessels and unequal nutritional conditions. The heart of one child, because of its better nourishment, may overpower that of the other through the anastomatic vessels. If this occurs at an early period, the weaker heart dilates into a tortuous vessel, the fetus remains undeveloped and becomes a parasite on its stronger brother. It is called an acardiacus. If one fetus dies after being fully developed and is long retained in the uterus, it is changed into a foetus compressus. Sometimes the stronger fetus causes a polyhydramnion according to Strassman, because its hypertrophied heart and kidneys produce more urine, while the weaker suffers from oligohydramnion. Polyhydramnion is so common with twins that when it is discovered, the existence of the latter is to be suspected. If the twins lie in one amniotic cavity, the two umbilical cords may be twisted, causing the death of one or both fetuses.

"Dichorionic or double-ovum twins are also subject to abnormalities. One fetus may die and be expelled, the other going normally to term. The author delivered a woman at term of twins, and she stated that five months previously she had had, in New York city, an abortion of four months. Again the dead fetus may be retained, and the liquor amnii being absorbed, it is flattened against the wall of the uterus, a dry shrunken mass. It may present before the normal fetus, giving rise to diagnostic errors, and it may be lost in the uterus after delivery of the placenta and cause puerperal infection and late hemorrhages. The placenta of the compressed fetus is white, hard, fibrous, infarcted, and demarked sharply from that of the normal fetus, and this finding on the placenta will arouse the suspicion of the accoucheur that another fetus has been retained in utero." (De Lee)

Most multiple pregnancies are complicated: 70 per cent. of them terminate before term.

Twins may in most cases be diagnosed by the large globular gravid

belly, and motion felt all over the abdomen, and palpation: triplets have rarely been diagnosed before delivery.

Ahlfeld places the mortality of multiple births during the first year of life at 75 per cent. The pluriparient suffers more during pregnancy; in delivery; and is less capable of nursing the children.

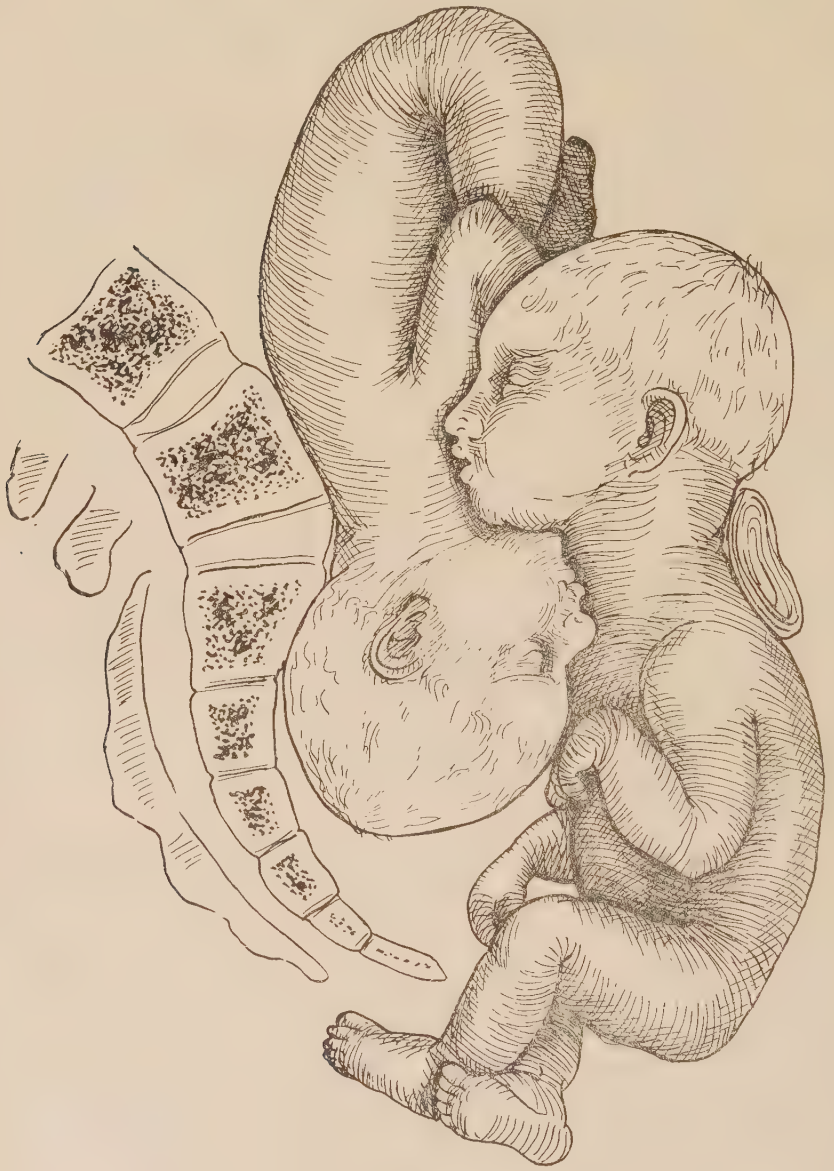

Fig. 124—Interlocking Twins. (De Lee)

Interlocking twins present a grave danger. The twins may both present cephalic presentation, but in such a way that the head of the after-

coming twin lies in the neck of the first. In such position only abnormally small foetuses can be born. It may be possible to perform deep episiotomy and then push the second head up out of the pelvis to permit the birth of the first.

If one twin presents his breech and impacts his chin under the chin of the other, many medical writers advise decapitation of one of the twins and forceps delivery of the other. This is never lawful. In absolutely impacted twins Lobenstine points out the only lawful treatment: he performed the Caesarean section and saved mother and twins.

Of course if one twin be dead, embryotomy should be quickly performed on it to clear the way for the living twin.

A hydrocephalus usually causes severe dystocia. The skull may contain several quarts of fluid, and may have a circumference of 32 inches. Such a foetus can not by the natural way of birth be born alive. Materialistic obstetricians reason thus: The child, even if born alive, almost invariably dies. Therefore his life may be disregarded and all efforts directed to save the mother. Perforation of the head with a trocar or other like instrument is their procedure. This lowers the plane of humanity to the level of stock-raising. A brutal utilitarianism usurps the supreme right of God over life. Such operation may never be performed on a living hydrocephalus.

The Caesarean section is the operation of choice. If you ask: Why should a useful mother suffer the hazard and the ills of the Caesarean section to save a monster, whose hours are numbered, and who never could be a useful member of society? I answer because the monster is a human individual with the inalienable right of life. A beggar idiot may not be directly sacrificed to save the life of the most useful member of society; nay not to save the lives of all the members of society.

It is claimed by some authorities that by carefully puncturing the head in a spot removed from the cerebral sinuses the child may survive. I know of no such case on record. If a competent obstetrician asserts its possibility *in casu* the priest may not prevent it.

Hydrocephalus often presents the breech: the hydrophalic head is not discovered until it is arrested at the inlet.

At such point Caesarean section is contraindicated. If the disproportion be so great that no method known to the obstetric art can deliver a live child, the accoucheur must await the death of the foetus. To the question: Why must we await an inevitable effect, and by waiting invite the death of the mother? I answer: Why may we not anticipate the slower inevitable action of nature and directly kill a plague-stricken adult who by every moment of his life spreads death to multitudes? Nature may kill, but man may not.

Another difficult case is great distention of the foetal abdomen. This may result from an accumulation in the peritoneum (ascites), cysts of liver or kidneys, dilated bladder, etc. The head comes through the vulvar orifice, and no means is found to deliver the absolutely disproportioned pathologic body. Here again the aforesaid authorities recommend puncture of the fetal body and piecemeal removal of its members.

Principles are the same as in the former case: Thou shalt not kill. The moral law demands that in all operations the child be given equal chances with the mother.

All operations must square with this principle.

About once in 400 deliveries there is prolapse of the cord. It may be an occult prolapse which is not suspected. No prolapse is visible or tangible. The child may die from compression of the cord in natural delivery.

In the second degree of prolapse the cord is still in the amniotic sac but forelying, exposing it to compression.

In the third degree of prolapse of the cord the bag of waters is ruptured and the cord is prolapsed into the vagina or out through the vulva. The absence of pulsations in it do not necessarily indicate that the foetus is dead.

The accoucheur should always endeavor to replace a forelying cord in the intact bag of waters. If the cord be prolapsed outside the vulva it should be sterilized and replaced within the vagina. Then if the earliest viability has arrived the child may be delivered: his state outside the belly, though not the best, is less precarious than his position in the mother. The delivery must be by the Caesarean section if the interests of the child demand it.

Prolapse of the cord has been observed as early as the fourth month, but it does not often occur until the foetus is viable. Its prognosis for the child is bad. An immature foetus may not be delivered in prolapse unless its irremediable condition be such that its delivery does not change to worse its chance of life.

"One of the most dangerous complications that may befall the pregnant woman is convulsions attended by coma." (De Lee) The liver or kidneys or both seem to be the seat of the disease. The general name given to the disturbance is *eclampsia*. Though the exact cause is unknown it is generally believed to be caused by toxins.

"The Attack.—Wherever the patient may be, she falls to the ground unconscious. The pupils dilate, the eyes are turned, and the head also, to one side; the patient opens her mouth, then the jaw is pulled laterally, and there may be a cry or a sigh. The whole body becomes rigid; the features are distorted; the arms flexed! hands clinched; the feet inverted; the toes flexed, and the whole person drawn to one side in a tonic spasm. The condition lasts for a few seconds, then the jaws open and close violently, the eyelids also, the twitchings beginning in the face, then usually one arm, then the leg, and now the whole body. This is a violent clonic convulsion which may throw the patient out of bed against any object. Severe injuries can result—even fractures of the skull or long bones; the tongue is protruded; the teeth may chop it up. Foam, often tinged with blood, comes from the mouth. The respiration is completely stopped, the chest being rigid. The pulse is high and strong; later it grows weaker, but may be hard to feel because of the convulsion. In rare cases the pulse is weak and the arterial tension low from the start, a fact which is explained by degenerative changes in the heart. The blood-shot eyes protrude, the face is swollen, the cyanosis is extreme, the lips are purple—altogether the pic-

ture is a horrible one. Gradually the convulsive movements remit, a few twitches or jerks take place, the patient lies quiet, the heart thumping violently against the chest-wall. For a few seconds the woman appears to be dying, but there is a long sigh, and stertorous breathing becomes established, coma supervening. Soon the respirations quiet down. In the favorable cases the patient wakes up after a short time bewildered, severely sore in all the muscles. After from a few minutes to an hour another fit occurs, or she may have no more. With recurring convulsions the intervals become shorter and the patient lies in deep coma all the time. Fever now begins; the pulse-rate rises. The fits may occur every five minutes, but usually the time is twenty minutes to one hour, and they may show some regularity of occurrence. Cases are on record of 81 (recovery) and even 593 convulsions (Spalding). These cases almost invariably die. The average number is from 5 to 15 attacks. The convulsions last from thirty seconds to two minutes, very rarely any longer, and these are bad cases. Between the attacks the patient may be quiet or restless, and sometimes there is great jactitation, with wild and exhaustive delirium. These cases usually show signs of severe liver involvement.

"Pains usually begin if the convulsions are at all severe, and labor is often rapid, when once begun. After labor the progress of the cases is generally more favorable, but the convulsions may recommence as late as the eighth day. Of great interest is postpartum eclampsia. When the convulsions begin after the delivery of the child, or a long time after the death of the fetus, it is probable that the poison was retained some place and finally was freed so that it could unite with the brain-cells (Liepman).

"Marked albuminuria with casts and blood are the rule in true eclampsia; occasionally there is anuria. Cases of eclampsia without albuminuria are due to apoplexy, epilepsy, meningeal disease, or reflex irritation. Examination of eclamptic women often shows tenderness over the liver, kidneys and stomach, with greatly exaggerated reflexes, marked leukocytosis, and often complete amaurosis.

"If the woman is to get well, the convulsions grow less severe, the coma lightens, the temperature goes down, the pulse slows, the cyanosis disappears, the mind begins to clear, and after from six hours to three days, rarely as long as a week, consciousness returns. A recrudescence of the fever usually means that sepsis is starting. Recollection of what happened from the beginning is completely lost, and the puerpera may deny her child when it is presented to her. This amnesia may extend as far back as a week before the actual attacks began, and occasionally there is weakness of mentality for several months after delivery. Puerperal psychoses are not uncommon as a sequel to those cases having had many convulsions, but they usually offer a good prognosis.

"In rare instances the convulsions cease without interrupting pregnancy, and the patient may deliver a living child at term. The author had a case where the patient had two attacks during pregnancy, with an interval of three weeks, in one of which attacks the convulsions were so severe that the jaw was dislocated, and yet a living child was born at term. More

usually the attack kills the fetus, the symptoms abate, and the product of conception is expelled in due course of time.

"If the woman is going to die, the attacks usually increase in frequency and force, the temperature goes up to 103 degrees F., sometimes to 107 degrees F., or it sinks; the pulse increases, becomes weak and running. Signs of edema of the lungs appear, with rattling and *pale cyanosis,* even between the convulsions, or death may take place at the height of a convulsion from apoplexy or heart paralysis. There is anuria or hemoglobinuria, or one obtains a few drams of thick, brownish urine from the bladder, which solidifies when heated.

"Sometimes the woman is successfully delivered, but the pulse does not improve, the coma deepens, and edema pulmonum closes the scene. Some cases are bad from the start, the patient dying after one or two convulsions in a few hours. Sometimes there are no fits, the patient falling at once into coma, and even coma may fail, the patient dying of exhaustion in collapse (Schmid). As a rule, the case ends one way or the other in three days.

"Rarely the course of the disease is that of acute yellow atrophy of the liver, with jaundice, petechiae, diminished liver dulness, the well-known urinary findings, delirium, jactitation, coma, exitus.

"*Other Forms of Eclampsia.*—Occasionally after a severe labor or during the last part of the second stage the parturient will have a single convulsion or a second milder one, without or with very slight albuminuria. This is called *eclampsia reflectorica,* and is the discharge of the overwrought nervous system, but in all probability there is a toxemic element also.

"An acute collapse after labor, simulating internal hemorrhage, embolism, or edema of the brain, and attended by albuminuria, is of the same nature as eclampsia, and requires careful differentiation from the other conditions.

"*Acute toxemia,* presenting all the manifestations of eclampsia, *without convulsions,* has been mentioned. The patient sinks at once into coma, which is almost always fatal. Premonitory symptoms have been present, as a rule, such as headache, visual disturbances, nausea, vomiting, epigastric pain, and low blood-pressure. Fever is usually present and a slight jaundice is seldom absent, the blood-pressure sinks very low, and such cases are characterized by great asthenia. Marked liver autolysis is usually found at autopsy, but death may have been too quick for much change in the kidneys.

"*Nephritic Eclampsia.*—Women with chronic nephritis seldom have convulsions in pregnancy and labor, but they suffer from other complications—anasarca, uremia (usually coma), pulmonary edema, cardiac paralysis, retinitis albuminurica, cerebral hemorrhage, then with convulsions, premature labor, abruptio placentae. Convulsions do occur in chronic nephritics, and then it is hard to make the differential diagnosis.

"Acute nephritis is more easily developed in a pregnant woman because the kidneys are carrying an increased burden, and, too, are often diseased through the pregnancy changes (the kidney of pregnancy, Ley-

den), and when it does occur, convulsions almost always result. An apparently healthy gravida, suddenly, after exposure to cold, after a flagrant error of diet (a Christmas dinner, for example), or following an angina, develops an acute nephritis with convulsions. These cases are the ones which occur without much warning, and may surprise the most painstaking accoucheur, and clinically they cannot be differentiated from true eclampsia.

"*Causation.*—Eclampsia occurs once in about 600 pregnancies but this varies in different statistics and in different localities. The cause of this variation is unknown. Primiparae are oftener (3 to 1) affected than multiparae, but in the latter the prognosis is usually worse. It generally appears in the last three months of pregnancy, but it may occur as early as the tenth week (author's case). Fatal cases are reported in the third, fourth, and fifth months. In about 20 per cent. of the cases the convulsions begin during pregnancy; in 60 per cent. during labor, and in 20 per cent. after delivery. Schröder had 62, 190, and 64 cases respectively. Predisposing causes are primiparity, especially in advanced years, excessive nervous irritability, previous disease of the kidneys or liver (scarlatina or other infectious disease), heredity (Elliott reports a case where a mother and four daughters died of eclampsia), twin pregnancy, contracted pelvis, infantilism.

"In spite of the enormous amount of study that has been put upon it, the real cause of the disease is unknown. The theory that has the most plausibility is that of a toxemia—some noxa circulating in the blood which produces necrosis of the liver, and, directly or indirectly, degenerative changes of the kidneys and also convulsions, by direct toxic action on the anterior cerebral cortex." (De Lee)

The urine of a woman should be tested every two weeks. If the urinalysis gives evidence of deficient renal action, the diet should be regulated. The nitrogenous food should be reduced to a minimum and the emunctories stimulated to throw off the poisons. A simple prophylaxis where eclampsia is feared is: Rest in bed; nothing ingested but water for three days; then a milk diet; only when the conditions are much improved are vegetables allowed, to which may be added as improvement continues, eggs, fish, chicken and lamb: never a full portion.

In obstinate cases many authorities advise to induce premature labor. If the child is viable, and the eclampsia will not yield to treatment labor should be induced. Before viability or death of the foetus the ethical law forbids the induction of labor. The ethical law leaves us not helpless. Stroganoff, a contemporary Russian obstetrician of the first rank, advises expectant treatment with morphin, chloral hydrate, and chloroform. By the narcotics he arrests the convulsions before they can develop.

Stroganoff begins with hypodermic injections of a quarter of a grain of morphin. Then he slowly injects into the rectum from 20 to 40 grains of chloral dissolved in four or five ounces of warm water. This treatment alternates at intervals of from two to seven hours. A light chloroform anesthesia is also recommended by Stroganoff, but it is not in favor with many accoucheurs.

With the omission of the chloroform the Stroganoff treatment is to be recommended.

De Lee thus describes the adjuvant treatment:

"Since the convulsions sometimes show frightful vehemence, the patient must be quickly undressed and put to bed, surrounded with pillows, and watched by a trained attendant, preferably a physician. False teeth should be removed. To prevent the biting of the tongue a simple device may be used. A large wooden clothespin is wrapped in a thin handkerchief and hung near the head of the bed. As the attendant sees the attack approach it is placed between the teeth, so that the elasticity of the prongs takes up the champing of the jaws. If the tongue is swollen from injury, it may be necessary, to prevent asphyxiation, to intubate, using soft-rubber tubing, or to do tracheotomy. Restraint of the movements should not be made—all that may be done is to keep the woman from injuring herself. Heart failure may be induced by forcibly keeping the patient still. For extreme and exhausting jactitation morphin may be given, or, but rarely, an anesthetic may be used. Mucus in the throat and mouth is to be removed frequently, but with gentleness, and it is best for the patient to lie on the side, to allow the oral secretions free escape—an especially important injunction during vomiting; these precautions are taken to prevent aspiration pneumonia. In the side position, too, the swollen tongue falls forward and frees the respiration.

"All irritants should be withheld, which means that examinations are to be omitted, if possible, and the patient disturbed only for absolutely necessary treatment. Visitors should be excluded from the room, which should be well darkened, and the attendants should move about quietly, permit no loud talking, jarring the bed, etc. As in tetanus, these external irritants may excite a convulsion.

"*Narcotics.*—Formerly chloroform was used for each convulsion, and even continuously. G. Veit introduced the morphin treatment, and von Winckel gave chloral in large doses per rectum. Experience has not sustained these methods, and, indeed, they are only symptomatic, since the attacks are but a symptom of the general intoxication. While the frequently repeated convulsions are a severe strain on the heart and the cyanosis weakens both heart and general system, still it is the intoxication which is to be feared, and one should hesitate before adding other poisons to an already overloaded circulation. Without doubt chloroform causes many deaths, by degenerating the liver, the blood, and the heart muscle (secondary chloroform death), and morphin increases the coma. The children often die from undoubted morphin poisoning. Lumbar anesthesia has been tried, but failed, and the same result was experienced with lumbar puncture. The author uses narcotics and anesthetics as sparingly as possible.

"*Elimination.*—On the theory that eclampsia is a toxemia, one should try to get rid of the poisons through the emunctories. Experience has been disapointing, as one would expect, since the toxin is probably colloidal, and closely bound to the nerve-cells. Cathartics should be withheld until the uterus is empty, because of the danger of infecting the operating field

with liquid feces. After delivery a full dose of salts, jalap, or castor oil is given, but the patient is not to be strongly purged. Diaphoretics, especially pilocarpin, are to be condemned. Hot baths involve too much manipulation, but hot packs and alcohol sweats are recommended by many authors. They should not be used during labor, but afterward one or two may be given, though they are depressing and have caused death. In view of this fact, and because they have not proved of any real value, the author has dispensed with them. Another objection raised against the packs and sweats is that they concentrate the poison in the blood and thus the nerve-centers get a double dose, while the amount of poison thus eliminated through the skin is minimal.

"Medical diuretics are too slow in action, if they are not objectionable, because irritating to the kidneys.

"Diaphoresis and diuresis are best obtained by the free exhibition of liquids. Water and lemonade by mouth and salt solution hypodermically do more to favor the action of the skin and of the kidneys than any other means, but one must observe care not to overload either the stomach or the heart, accidents which the author has seen as the result of overzealousness. Liquids are administered to unconscious patients by stomach-tube, having due regard to the amount given and the possibility of some of the fluid penetrating the bronchial tubes.

"*Venesection* is one of the oldest remedies for eclampsia, but with the advent of chloroform it lost its prestige. Now it is coming into favor again as an adjuvant, and bids fair to hold a permanent, but secondary, place in treatment. In cases in which the convulsions recur frequently in spite of treatment, in which the pulse is full and strong, the face flushed or cyanotic; in short when the picture might be called sthenic or apoplectic, bleeding will do good. In cases of the opposite type bleeding is a procedure of doubtful utility. Stimulation is here more desirable. When the evidences of cardiac engorgement are present and pulmonary edema threatens, even if the pulse is weak, bleeding with stimulation may tide the patient over.

"By removing a pint of blood one removes considerable poison, but also favors diuresis and diaphoresis. Venesection should be reserved until after delivery, since a hemorrhage at birth may make the further bleeding unwise. It may be impossible to get enough blood from the vein, because it clots so rapidly and firmly in the incision. Letting the arm depend will aid here.

"Oxygen is another adjuvant. It should always be used in the form of pure fresh air, and a great deal of it—a point frequently neglected while the oxygen tank stands in the stuffy room. Oxygen is given during the convulsion and right after it, to relieve, as quickly as possible, the cyanosis, and it is valuable as a heart support. Artificial respiration may be necessary to tide the patient over a syncope following an attack, or to improve the oxygenation of the blood between attacks."

The best authorities are very favorable to prophylaxis and to the expectant treatment with narcotics when necessary.

The danger does not cease with delivery. It may be necessary to continue the same treatment for a period, adapting it to the gradual restoration of the woman's health. The convulsions may recur for several days after delivery: puerperal insanity may supervene.

The eclamptic should not give suck to her child until she has been free from toxemic symptoms for several days; not until the urine is nearly normal. Toxins are transmitted by the maternal blood stream before the birth of her child, and by the mother's milk in nursing. A considerable percentage of the children die before birth, in birth, and immediately after birth. The causes are premature birth, toxemia, asphyxiation, drugs given to mother, injuries during birth, eclampsia after birth.

If the mother dies while the unborn child is still alive immediate celiotomy should be performed.

That the foetus may survive the death of the mother is certain: the interval is uncertain.

Well authenticated cases are recorded of delivery of a living babe from a dead mother. All physicians recognize that a Caesarean section on a dead mother may bring forth a living child. A classic example is St. Raymond Nonnatus, who, according to the Roman Breviary, "e mortuàe matris dissecto latere in lucem eductus fuit."

Cases are on record in which the fetus was expelled by spontaneous post-mortem labor.

According to De Lee there are about 100 cases of spontaneous delivery of the child after the death of the mother. Some assign as cause of this the power of contraction of the uterine muscles after the death of the mother. Two hours is the limit usually assigned.

Other authorities seek the cause of the birth in the putrefactive gases which push out the fetus. This cause can not govern cases in which the birth has place soon after the mother's death.

In 1901 Dr. Rangeley of Virginia advised Dr. Edgar of Cornell University that Mrs. J. Vaden, who died suddenly after ten months' pregnancy, had given birth to a child in her coffin. The body was exhumed for legal reasons and the dead foetus was found well down under the dead woman's thighs.

An effort therefore should always be made to deliver the foetus after the death of the mother if it can be done within an hour after the mother's death. If the mother dies of a protracted illness there is small hope that the foetus survive her. When the mother's death is sudden, the foetus may live for an hour or less. Brunton, after a quarter of an hour, extracted a living child from the mother's cadaver. (Trans. Obstet. Soc., London, XIII, p. 88)

Buffon and Shierig have taken living foetuses from the bodies of female beasts more than an hour after death.

It is sometimes possible to extract the child per vaginam from the dead mother, beginning the operation when the mother is evidently moribund. The better way is celiotomy. The child thus delivered will be profoundly asphyxiated from failure of the maternal circulation: only a small

percentage survive. The value of a human life warrants the attempt, even though the mortality is high.

For this reason the Roman Ritual orders:

"If a pregnant woman die the foetus shall be delivered as soon as possible and if living shall be baptized."

A question now arises: In the absence of a physician or other person competent to perform celiotomy may the priest perform the operation?

Theological opinion is not concordant. Cangiamila, Debreyne and others affirm the priest's right and duty to perform the operation. Capellmann believes that the operation is beyond the priest's skill, and therefore denies his obligation, though he allows a priest who believes himself able to perform the operation.

The strong argument against such action by a priest is that the action is indecorous for his character, and beyond his skill. Capellmann urges both of these arguments.

In 1780 the Apostolic Vicar of Su-chau, China, was advised by Rome that the missionaries should teach the Chinese the wisdom and spiritual value of the Caesarean section to give baptism to the child within the body of a dead mother, but Rome forbade the missionaries to demand the operation or to perform it.

In the year 1899 the question again arose in China: Rome answered by citing the former decree. This is particular legislation, and forms no law for general practice. The indecorum of the action is a myth. It would, however, be indecorous if unskilfully performed. The average priest could not perform it, because of lack of anatomical skill, and of lack of that mental equilibrium necessary for the success of the operation. In the words of Capellmann:

"Would he not, with the little knowledge that he possesses, be almost paralyzed by his well-grounded fears, and thus hazard the success?"

This line of argument should deter the priest from acting when it is possible to obtain a more competent man. But in the absence of a better operator he should heroically do the best that he can. What is the hazard? The woman is dead. The child is dead or will be dead in a few minutes. Is not the feeble chance offered by the operation of an amateur better than no chance? Of the fear of scandal there seems no danger. The priest thus placed should be very prudent but not cowardly.

The Roman Ritual sets no limits within which the operation should be performed. Therefore every pregnant woman is contemplated even in the first months of pregnancy on account of the necessity of baptism.

Great care must be exercised to ascertain that the gravida is really dead before the operation be attempted.

There follows a list of mutilating operations which tend to lessen the bulk of the child to bring it dead through the parturient canal. They may all be listed under the head of embryotomy.

"*Craniotomy* is an operation which consists in opening the fetal head, the evacuation of the brain, and extraction by means of a large bone forceps or a sharp hook.

"*Perforation* is the first step in craniotomy, but is sometimes applied to the whole operation.

"*Cranioclasis* is the third step in the operation, and is also sometimes applied to the whole operation. The instrument, which is nothing more nor less than a large, strong, especially constructed bone forceps, is called a cranioclast.

"*Cephalotrypsis* is an operation in which the head is crushed by means of a powerful forceps supplied with a compression screw, no perforation of the head being made. The instrument is called a cephalotryptor, and was invented by Baudelocque. It is an obsolete operation.

"*Decapitation* means what it says,—section of the neck,—and is accomplished either by means of a blunt hook or a sickle-knife, the écraseur, or scissors.

"*Embryotomy* is applied to decapitation, to the section of the fetal trunk, or to the opening of the body cavities.

"*Exenteration* means disemboweling the fetus to diminish the size of the trunk.

"*Brachiotomy* means section of an arm.

"*Cleidotomy* is an operation done by Ferondi in 1877 and introduced by Herbert Spencer in 1895. It consists of section of the clavicles, and is used when the shoulders are too broad to pass, the head being delivered and the child dead.

"*Spondylotomy* is section of the spinal column." (De Lee)

These operations may and should be performed on a dead foetus when necessary: they may never be performed on a living foetus. Of craniotomy De Lee declares:

"Pinard and a few Catholic authors demand the abolition of craniotomy on the living child, but the overwhelming majority of obstetric authorities declares this extreme position untenable. All, however, agree that the necessity for destroying the child is less and less frequent as the diagnosis of disproportion is earlier discovered, giving a chance for Caesarean section and pubiotomy. It follows, therefore, that craniotomy will be more frequently performed in home practice. In a good maternity the necessity for sacrificing the babe will be of rarest occurrence. For centuries craniotomy was the opprobrium of obstetric art. It is this no longer in the art, but remains such in obstetric practice.

"Legally the mother has a right to demand that she be exposed to no unusual danger for the sake of her child, and she may refuse to do so even at the request of her husband. Also, she has the right, even if opposed by her husband, to run added risk for its sake if she wishes. The legal status of the unborn child is still unsettled (Kiernan). At present it is part of the mother, and has no legal existence until the cord is cut. The mother may recover damages for its loss by wilful or negligent means though itself it has no redress if it survives the injury. The moral and ethical aspects of the question are too broad to be more than mentioned here. The stand of the Catholic Church has been alluded to,—'Non Occides!'—and in such families the attendant is guided by the word of the priest, who is always to be summoned. If the accoucheur is convinced that the Cae-

Fig. 125—Perforation with Trephine. (De Lee)

sarean section demanded would kill the mother, he may retire from the case. On the other hand, if the family insists on the sacrifice of the child, when the accoucheur feels that there are good chances for a successful Caesarean section, he should likewise decline but legally he must stay by the patient until another qualified practitioner has assumed charge.

"Is consent of the patient or next of kin necessary? Legally, yes,—indeed, the attendant could be held for malpractice if the mother suffered injury from an operation less safe than a craniotomy, performed without her consent."

Touching a woman's obligation to submit to the Caesarean section Noldin offers the following excellent teaching:

"*De obligatione subeundi operationem caesaream* dicendum est vix unquam exsistere certam obligationem subeundi caesaream vel similem operationem. Et sane:

"*a.* Si adest quidem spes salvandi matrem, nulla vero exsistit spes extrahendi puerum vivum, mater non potest obligari ad patiendam operationem, quia nemo tenetur servare propriam vitam mediis extraordinariis. Negat quidem *Capellmann* hanc operationem adhibito chloroformio esse dicendam medium extraordinarium; at non potest negari matres affici maximo horrore operationis caesareae; remedium autem, a quo omnes maxime abhorrent, est dicendum extraordinarium, etsi a doloribus praescindatur.

"*b.* Si adest spes salvandi matrem et vivum extrahendi puerum qui in sinu matris baptizari potuit, mater non tenetur subire incisionem, etsi baptismus pueri sit dubius: etenim ut quis cum propriae vitae periculo teneatur subvenire proximo exsistenti in extrema necessitate spirituali, requiritur, ut spes salvandi proximum sit certa et ut extrema necessitas pariter sit certa; atqui neutrum hic locum habet.

"*c.* Si adest spes salvandi matrem et extrahendi vivum puerum, qui in sinu matris baptizari non potuit, sunt, qui obligent matrem ad patiendam incisionem, ut puer ab aeterna damnatione salvetur; verum certa obligatio statui vix potest, quia vix unquam adest spes certa felicis eventus atque ideo salvandi puerum a morte aeterna; quare practice operatio quidem suaderi poterit, ab urgenda autem obligatione ut confessarius abstineat, prudentia suadebit.

"*d.* Immo non desunt auctores, qui obligationem matris subeundi vitae periculum, ut proles baptizari possit, simpliciter negant, *a.* quia sors infantium absque baptismo decedentium nequit dici infelix; *b.* quia solum probabile est, prolem postea iam adultam adepturam esse vitam aeternam."

Touching anesthesia in labor De Lee gives the following data:

"After much experience, the author has come to dispense with anesthetics in the first stage of labor, except in unusual instances. A cheerful, hopeful demeanor, sympathy and encouragement from the physician, will usually help the woman to bear the pangs of labor until the second stage is about to begin. Suggestion to a certain extent, may be employed. When the head is passing through the cervix the pain is intense, and here a few whiffs of ether are helpful. During the second stage the author gives

ether to the 'obstetric degree,' and as the head escapes from the vulva, the period of greatest anguish, the anesthetic is pushed to the 'surgical degree,' but stopped as soon as the head is born, the patient usually waking up a few moments after the child makes its first cry.

"Women vary very much in their ability to stand pain and in their demand for anesthetics. The author conducts many labors without any narcotic, many with just a few deep inhalations of ether as the head is born, and only a few with prolonged anesthesia. Operative deliveries, with a few exceptions, are done under surgical anesthesia, but perineorrhaphy, cleaning out of the uterus, and tamponade are as often done without, as with, narcosis.

"Two degrees of anesthesia have been mentioned. Obstetric anesthesia is the use of the narcotic only to dull or relieve the pain, without, or with only a very brief, loss of consciousness. Surgical anesthesia is the abolition of consciousness and of body rigidity.

"*Objections to Anesthetics—Chloroform and Ether.*—1. Without doubt the parturient enjoys a slight immunity from the risks of surgical anesthesia, and obstetric anesthesia is but little dangerous. It is not true that deaths have not occurred during the latter form of administration, but they are rare, and other conditions have usually been present, as goiter and status lymphaticus. Diseases of the liver and toxemia, especially of the hepatic type, contraindicate all anesthetics. Chloroform is especially harmful in such cases, not seldom leading to acute yellow atrophy of the liver, a condition which closely resembles, if it is not identical with, 'secondary chloroform death.'

"2. Anesthetics weaken the uterine contractions. The clinician does not need the proof brought from the laboratory. Even under the obstetric degree the pains are sometimes weakened, are further apart, and, in the writer's experience, hemorrhage in the third stage is more profuse, and contraction and retraction of the uterine muscle often delayed or insufficient. Ether acts thus to a much less degree. On the other hand, when contractions are tumultuous or irregular and too acutely painful, or when the woman will not bear down in the second stage because of the pain in the vulva, an anesthetic will often calm and soothe, thereby actually hastening delivery.

"3. The anesthetic may affect the child. Administered for a long time, as was formerly the custom, the fetus could obtain sufficient of the drug to be seriously affected by it, investigation having shown that there is an acute albuminoid degeneration of its vital organs during the first days; but given as here recommended, the danger to the child is very slight. Morphin given near the end of labor has killed many children.

"4. Objections on the score of religious scruples, that pain in labor is 'physiologic' and that the mother will not love her child born without pain, need no comment.

"5. Anesthesia, unless deep, in rare instances excites the parturient almost to frenzy, and thus places her beyond control of the will of the accoucheur. If her efforts are needed for the completion of the delivery, as in breech cases, the attendant finds himself in a dilemma. Either he must

deliver under surgical anesthesia or wait until the woman gains full consciousness. The latter course is recommended where practicable.

"Choice of Anesthetic.—For many years I used chloroform exclusively in my obstetric work, because it was quicker in action, easier to carry, pleasanter to take, and seldom caused nausea and vomiting. Its bad effect on the pains was tolerated because this could be cared for satisfactorily. One secondary chloroform death in a normal case, and two after eclampsia, caused serious question in my mind, and now ether is used except in rare and special instances (see Sippel). Littig, after reporting 63 chloroform deaths (5 obstetric), condemns the drug unqualifiedly. Ether is slower in action, more is required, it is bulkier, and the woman often vomits afterward; but it has proved itself safer in obstetrics, as it has in surgery, and, properly administered, one can obtain very satisfactory results. Chloroform has another serious defect, that, in the presence of an open flame, it is decomposed into carbonyl chlorid and hydrochloric acid, both of which irritate the air-passages of all in the room, making attendants cough, and even fatally poisoning them. The patient, too, suffers from this, and perhaps some of the unexplained puerperal deaths may thus be cleared up. Ether is to be used where it is necessary to operate in the presence of sepsis, nephritis, eclampsia, cardiac disease, goiter or uterine atony. Ether may not be used too close to an open flame because of the danger of explosion, but I find the fear of this accident much exaggerated.

"Indications.—1. Great pain at the end of the first stage or in the second stage. 2. Great excitability at these periods. 3. Tumultuous pains at any period of labor, especially if the cervix is not dilated or if the head is on the perineum, the idea being to moderate the power of the uterus and to save it, the cervix, or the perineum from rupture. 4. To preserve the perineum when the bearing-down efforts are too strong. 5. To eliminate the inhibition of bearing down due to pain.

"Conditions.—(1) Labor must be sufficiently advanced; ether is very rarely given in the first stage, best in the second. (2) The pains must be strong and regular, so as to offset the weakening effect of the drug. (3) When given simply for the relief of pain, examination of the patient must have excluded toxemia, hepatic disease, goiter, hemophilia and sepsis." (De Lee)

In 1899 the neurologist Schneiderlin recommended the combination of morphin and scopolamin to produce surgical anesthesia. Scopolamin is a mydriatic alkaloid from the root of Scopolia atropoides, Atropa belladonna, and other solanaceous plants. In 1902 von Steinbüchel recommended its use in labor. This is the famous "Twilight Sleep". It was extensively used in the Krönig Clinic in Freiburg. Krönig and Gauss were its foremost advocates. In 1913 in a paper read at Chicago, Krönig claimed good results in 3000 cases. De Lee went to Freiburg to study the method. He describes it thus:

"After labor is well on its way, when the pains are four or five minutes apart and lasting thirty or more seconds, the first injection is made. This consists of one-sixth grain of morphin and one-onehundredfiftieth grain scopolamin. Krönig and Gauss insist on the use of narcophin—a proprie-

tary narcotin-morphin-meconate, and Straub's 'Scopolamin Haltbar.' The latter is a permanent solution of the delicate drug, purchasable in sterile ampules. Forty-five minutes after the first injection another is given, but only one-twohundredth of scopolamin is used. After this the hypodermics are given every hour, using one-threehundredth to one-hundredfiftieth of scopolamin, and, in prolonged labors an occasional dose of morphin, one-eighth grain—all depending on the individual case. The object is to maintain the patient in a state of amnesia, and this is determined by testing her memory. The room need not be fully darkened, only the patient's face should be well shaded. Quiet must be kept, and only necessary attentions permitted. Shortly after the second injection, the patient is asked if she remembers what has gone before, has she seen the nurse or intern? If she remembers, another dose is given. If not, nothing is done for an hour, when if the mind seems to be clearer, another dose is given. Care must be exercised that the woman does not attain full consciousness. Usually, after one and one-half hours she drops off to slumber, the face reddened, the throat dry, the pupils contracted, the conjunctivae congested, the pulse 90 to 120, the skin a little warm and dry. Food is not given, but water freely; the patient asks for attention to her wants. During the pains she moves about restlessly, or turns from one side to the other, or grunts a little, and occasionally opens her eyes—to drop off to sleep again when the pain passes. She will respond to questions, but incoherently, and often forgets to finish a sentence begun, dropping off to sleep. As the second stage draws near its end, she bears down and becomes very restless. Occasionally this becomes extreme, and several nurses are required to hold her to prevent too rapid exit of the head, also to prevent her from clutching the pudenda with her hands. Her continual jactitation also disturbs the asepsis. A few whiffs of ether are often needed as the head passes through the vulva.

"An acute observer will always know when the head has reached the perineum, though it requires greater watchfulness than usual. Throughout the labor, but especially in the second stage the fetal heart-tones must be auscultated. I have found they often fluctuate decidedly, ranging from 100 to 180, but there is little cause for alarm unless they remain below or above these figures. In the second stage the irregular and slow or fast heart-beat is very much more significant and often indicates forceps. The passing of meconium is still more ominous. After delivery the child usually cries vigorously at once, but may be born in a state of apnea as one sees at Caesarean sections. Mild means of resuscitation suffice, but the child may be asphyxiated or narcotized to a serious degree, requiring prolonged efforts to start respiration.

"Labor in most cases is slightly prolonged, in some cases much delayed. If this occurs in the second stage, hypophysin may be administered or the forceps applied. Polak uses the forceps, as a rule, after a second stage delay of an hour in multiparae and two hours in primiparae. For operative delivery and for sutures ether is necessary, as the patient struggles and is not responsive to order. It may be even necessary to give ether for a thorough inspection of the perineum for lacerations. If too much

pain is perceived at the end of labor the effect of the treatment may be lost, memory returning.

"Postpartum hemorrhage is not more frequent after spontaneous labors, but is almost the rule after operative deliveries. It responds readily to the usual treatment. I usually tampon unless the bleeding ceases very quickly.

"The woman wakes up from an hour to six after birth, and has none or faint recollections of the parturition. She often asks what day it is. If, however, she bends her mind to it she will recall more and more of the labor. It is best to keep up the amnesic effect by suggestion, with which much can be accomplished. The puerperium does not differ much from the usual. Where the local injury has been slight there is but little soreness; in operative and hemorrhage cases the condition of the patient is as would be expected.

"*Contra-indications.*—Contracted pelvis of all types; inertia uteri from any cause; advanced pulmonary cases and heart disease; where there exists an immediate or prospective indication for the operative termination of labor, as placenta praevia, eclampsia, asphyxia in utero; where there is a known idiosyncrasy to atropin, or the first dose shows this; advanced labor (the best time is to begin from eight to three hours before actual delivery). A certain number of women will prove refractory and it would require too much of both drugs to produce amnesia. Again the drugs may stop labor completely and must be discontinued on this account. In only a small percentage, not over 30, of cases may we use the treatment, which is also Harrar's opinion.

"*Morphin and Chloral.*—Morphin is frequently used during the first stage of labor, alone or combined with a minute dose of atropin or scopolamin, to calm excessive uterine action, to soothe the patient, or to procure needed rest. For the latter purpose it may be supplemented with bromid of soda per rectum. Morphin should not be given toward the end of the first stage nor in the second stage, because experience has shown that the fetus is then more liable to be narcotized and rendered incapable of establishing respiration after delivery. Chloral should be very sparingly used, its action being very similar to that of chloroform, and, too, it irritates the kidneys.

"*Nitrous oxid gas mixed with oxygen* has been used in labor at intervals since 1878. It is frequently administered during pregnancy, and, with apparent safety, for the extraction of teeth. Recently it is again recommended to produce analgesia in the last few hours of labor, given like chloroform, during pains only. While not sharing the enthusiasm of Lynch, I believe, from my own experience, that gas-oxygen analgesia has a place in obstetrics, but that oxygen must be liberally admixed to prevent asphyxia neonatorum."

One of the foremost advocates of the "Twilight Sleep" (Dämmerschlaf) is Polak, Professor of Obstetrics in the Long Island College Hospital. He reported favorably on 155 cases. He lays down very careful directions. The purity of the drugs is essential. Many leading American authorities disagree with Polak.

Dr. Chas. M. Green, Professor of Obstetrics in Harvard University, declares:

"I have long ago abandoned this agent, however, for two reasons: First, because it has apparently been the cause, occasionally, of fetal asphyxia. Second, because the effect of the drug on the mother is often uncertain, and unless used with great care may cause unfavorable or dangerous results. Moreover, we have other safer measures for the relief of pain in labor, so I have given up teaching the use of scopolamine in my lectures."

Dr. Williams of Johns Hopkins University considers it unsatisfactory in general and dangerous in private practice.

Hirst of the University of Pennsylvania discontinued it "because there were too many cases of post-partum hemorrhage, too many cases in which forceps had to be used, too many asphyxiated babies."

In Journal Amer. Med. Assoc., May 22, 1915, p. 1723, Baer of Michael Reese Maternity Hospital in Chicago gave a report of 60 cases of the "Twilight-Sleep." He contradicts Polak. The conditions in the Hospital were ideal. Pain was absent in only one woman; was diminished in 39; was undiminished in 19; was increased in one. Nine of the women were delirious: it took three attendants to put one of the delirious women in a straight-jacket. The restlessness of a large number complicated the pregnancy and exposed them to infection: they will clutch their genitals with their hands: One woman died of ruptured uterus: the baby also died. Thirteen of the children did not breathe at delivery.

The declaration of Davis of the Jefferson Medical College of Philadelphia seems to point the wiser course:

"At present the most available and safe anesthetic for use during labor is pure sulphuric ether. In using this and other anesthetic, a simple clinical rule should be remembered: Do not give a patient in labor an anesthetic until labor is so far advanced that, if necessary, you can deliver the patient by forceps or version. The reason for this rule is the fact that in some cases anesthesia, although partial, stops labor pains; while with other patients it greatly increases their vigor. It is impossible to tell what will happen before anesthesia is given.

"In spontaneous labor, when the second stage is well developed and the uterus is contracting strongly, a small quantity of ether may be inhaled at the height of the pain. The anesthetic should be immediately removed as soon as the pain is over. At the moment of expulsion sufficient ether should be quickly given to render the patient entirely under the control of the obstetrician. With this help he can deliver the head in the interval between muscular contraction, thus lessening the danger of laceration and injury to mother and child. As soon as the presenting part is born the ether should be removed from the patient's face, when she will immediately rouse. As soon as the next pain comes ether should again be used to avoid lacerations by the shoulder. Ether used in this way is safe, efficient, and promotes labor. Patients state that they do not know when the child was born, although they awoke immediately afterward. An unskilled person who will promptly obey the obstetrician can administer the

ether if the obstetrician shows at first about how much he wants given. What will wet a handkerchief or napkin over an area the size of a silver dollar is usually sufficient to relieve suffering during a pain: at the moment of birth more is needed.

"In the same way ether may be used for the immediate closure of a laceration. While as little as possible should be given, still no harm will be done if the patient is spared as much pain as possible.

"For obstetrical operations ether and oxygen furnish the safest and most efficient anesthetic. Anesthesia for obstetrical operations should be given with the same care now practised in hospitals in major surgery. In private houses the obstetrical anesthetizer may help in controlling the action of the uterus during delivery, and in strengthening uterine contraction during the third stage of labor and afterward. The obstetrical anesthetizer should understand labor, and thus be able to assist the operator intelligently.

"In hospitals for obstetrical operations a skilled anesthetizer should be present and should have at his disposal ether, chloroform, and nitrous oxid and oxygen. He should choose the anesthesia with reference to the patient and the operation which is to be performed."

It would be excessively rigorous to declare the "Twilight-Sleep" to be immoral, but competent data warrant a vigorous protest against a means fraught with such danger to life in order to avoid a physiologic pain. Why abandon tried safe anaesthetics in favor of a dangerous fad?

The Third Stage of Labor.—According to De Lee more women die from accidents of the third stage of labor than during the other two stages combined. The accoucheur must make sure that all the membranes have been expelled; he must control post-partum hemorrhage; and must guard against sepsis. If some of the membranes are torn off and remain in the passage they will, in most cases, come out with the lochia, in a few days. Surgical interference is contraindicated until nature has been given a chance.

Everything that comes in contact with the woman should be sterile.

"After the delivery of the placenta the vulvar region is cleansed of blood, etc., by the physician, and a sterilized vulvar pad applied, which is held in place by a T-binder. An abdominal bandage is generally used to hold the pad and to relieve the puerpera from the feeling of emptiness. Such a binder cannot be applied tightly enough to compress the uterus and thus prevent postpartum hemorrhage, and it should, therefore, only support the abdominal wall, and be loose enough to allow the nurse to put her hand underneath for the palpation of the fundus.

"No douches are given postpartum except for some special indication, *e. g.*, hemorrhage. When the soiled sheets are drawn from the bed and the patient's night-dress changed, the woman should be moved with great gentleness, and one must insist that the legs be kept close together and that the uterus be hard—these precautions to prevent air-embolism. If the uterovaginal tract has been tamponed, the moving of the puerpera is slowly and gently done, because of the danger of tearing the uterus over the tampon. The bed is now set to rights, the room cleared and darkened,

the mother warmly covered up, a warm-water bag placed at her feet, a hot drink given, and she is allowed to get the repose and sleep she has so well earned. By this time another hour has passed, and if hemorrhage has not begun, and the third stage was conducted properly, few complications need to be feared, though it is wise for the nurse to take an occasional look at the patient." (De Lee)

After her post-partum sleep the puerpera may have milk, broths, an oyster stew, and chocolate. On the second day she may have broths, cereals, toast, and stewed fruits. Gradually easily digestible solid foods may be added. If the puerpera has suffered eclampsia the milk diet should be continued to two weeks more. Throughout the puerperium indigestible foods should be avoided.

The bladder must be emptied within ten hours after delivery, and thereafter at least three times a day. Hot applications, suggestion, an enema, or the passage of hot water over the vulva are better than the catheter.

A dose of castor oil should be given on the morning of the second day. Constipation is the rule for twenty days after delivery. The castor oil may be given in whisky, wine, beer, orange juice. A daily enema is also recommended. The puerpera should sleep nine or ten hours per diem. Mild hypnotics may be used when necessary. Morphine is a last resort.

A woman may "get up" too soon; on the other hand she may be kept in bed too long.

After normal labor a puerpera may sit up in bed on the sixth day: she may leave the bed and sit in a comfortable chair for an hour on the ninth day; for two or three hours on the eleventh day: she may resume her normal habits of life on the fifteenth day.

If the delivery has had special pathological features the puerperium may demand special care.

The puerpera should submit herself to a careful surgical examination eight weeks after delivery. The child should also be examined at that time. The puerperium is the interval from expulsion of the foetus to the restitutio in integrum of the uterus. The duration is from six to eight weeks. During this interval coitus should not have place. The puerpera never entirely is restored to the pre-pregnancy state: child bearing leaves its evidences. When she has suffered much, these results may entail subsequent sterility and life-long suffering.

In the puerperium there are retrogressive changes reciprocal to the changes wrought by pregnancy. These are called the involution of the uterus.

At delivery the uterus sinks below the navel and lies anteflexed ventrally upon the abdomen. But on the first day post-partum it rises about 5¼ inches above the pubis. Then it sinks gradually to its normal place in which the cervix lies, a little below the plane of the upper border of the pubis. After delivery the uterus weighs more than five pounds: in the eighth week it has shrunk to its normal state of 2 ounces.

"A study of the healing process of the wounds made by labor forms an essential part of the duties of the accoucheur. The hymen tears in

every labor, and its relics are found as a row of mucous membrane tags circling the vaginal orifice and called *carunculae myrtiformes.* Around the clitoris, the labia minora, the introitus vaginae, in the vagina, in the cervix—especially in primiparae—occur larger or smaller lacerations, bruises, and scraped surfaces. These may heal by apposition and primary union, or by granulation and suppuration. Lacerations of the perineum occasionally heal by primary union, but usually granulate up from the bottom. Sometimes the skin unites, but the body of the perineum, the physiologically important part, does not unite well. Lacerations of the vagina usually heal readily, but with scar formation, which, if marked, will distort the base of the bladder, producing incontinence of the urine, or dislocate the uterus, producing sterility and other noxious conditions. Cervix tears occasionally unite by primary union. If infected they do not, but may give rise to cellulitis in the adjacent broad ligaments, with resulting life-long invalidism.

"In the absence of infection these wounds heal with very little inflammatory reaction. The surface is covered with a light-gray exudate. Underneath this pink, pointed granulations appear, the surface cleans off, epithelization rapidly occurs, and by the eighth day is usually nearly completed. Abnormal wound repair indicates infection somewhere in the parturient canal. Swelling of the labia, edema around the wounds, which have a reddened, angry aspect, greenish, yellowish, even dark sloughing of the surface of the wounds, pain, fever, and illness, indicate that the normal process is being interfered with by infection.

"Another striking phenomenon of the puerperium is the appearance of the lochia, a discharge from the genitalia at first bloody, then sanguineous, then purulent, finally mucoserous, before ceasing entirely, in three to six weeks. On the first day the lochia are almost pure blood, normally not mixed with clots—*lochia cruenta* or *rubra.* Clots, unless large and numerous, are not insignificant. The flow is followed by one of blood-stained serum, which lasts a day or so, after which the discharge is thicker, of a maroon color and creamy consistence, with a characteristic order—*lochia sanguinolenta.* Gradually the bloody mixture grows less, the white blood-corpuscles increase, the lochia resemble cream,—*lochia alba* or *purulenta,* —until at the end (thirteenth to the seventeenth day) there is only a slight mucoserous discharge.

"The odor of the lochia varies from day to day, varies with the patient, some women naturally possessing a peculiar odor (even with the menses), and with the kind of bacteria present in the vagina. Normally, the odor is not very offensive, being faded or insipid, like old meat, or strong, like perspiration. If the lochia are fetid, or have a fruity, purulent odor, or sharp and biting, like sanious pus, the puerpera is more or less dangerously diseased. Decomposing clots or membranes, a forgotten piece of gauze, lend the lochia the foul odor of decomposition, even when the general condition of the puerpera is not disquieting. The other characteristics of the odor referred to indicate that the puerpera is suffering from one of the severer types of infection." (De Lee)

ECTOPIC GESTATION

Ectopic gestation, or extrauterine pregnancy, eccyesis, denotes the development of the impregnated ovum outside of the uterus. It is evident that it is an abnormal pathologic condition. As determined by the place of attachment of the ectopic ovum, extrauterine pregnancy may be ovarian, tubal ampullar, tubal isthmial, tubal interstitial, and abdominal. Rare cases of pregnancy have been reported in a stump of Fallopian tube after vaginal hysterectomy, and after partial salpingectomy, attesting the locomotive powers of the spermatozoa. The most frequent ectopic fetation is in the tube; and especially in its isthmus. The causes of ectopic gestation are not all known. Among the plausible reasons advanced are salpingitis, pelvic adhesions, defective tubal celia, diverticula and accessory tubes, disease of the corpus luteum.

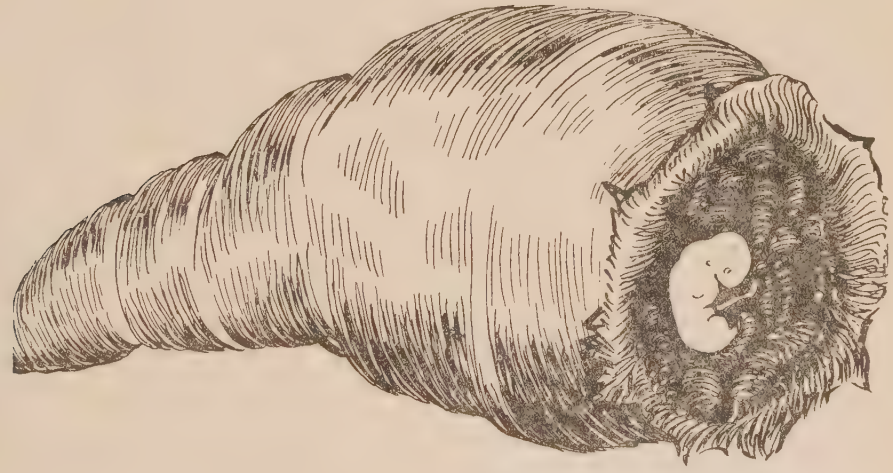

Fig. 126—Tubal gestation. (Lewis and de Roulet)

"A tube diseased or deformed from a previous attack of gonorrheal salpingitis may recover enough to allow impregnation of the ovum, but the ovum may be arrested in its passage through the tube by adhesions, or because of blind pockets due to adhesion of parts of the folds of its mucous membrane. The ovum may pass so slowly that it grows too large to go through the whole length of the tube. In such cases the ovum may embed itself in the mucous membrane of the tube, and cause tubal pregnancy." (Handbook of Gynecology, Lewis and de Roulet)

It is an evident sophism therefore to demand the liberty of excision of the pregnant tube on the plea that is a diseased organ, which threatens the woman's life. That which threatens the woman's life is not the disease of the tube, but the pregnancy of the tube. The tube may be removed when it ruptures; for then it is a diseased organ. The excision of the *ruptured* tube is lawful independently of the place or state of the foetus, but no direct act against a live foetus is ever lawful. Lewis and de Roulet declare that in tubal rupture the foetus dies. (Handbook of Gynecology, p. 411.)

Fig. 127—Tubal Abortion.

De Lee (l. c. p. 395) declares that in tubal rupture the foetus "does not always die." We are of the opinion of Lewis and de Roulet, but touching the ethical point it would be indifferent. The foetus which has ruptured a tube which threatens the mother's life would have the status of a foetus in a myomatous uterus which threatens the woman's life.

Certain anomalies of the uterus give rise to abnormal conditions in pregnancy.

In the embryo two ducts, one on each side of the dorsal axis, develop from the mesodermic cells of the walls of the coelum. In embryonic life they empty into the cloaca, or common fetal opening of the urogenital tract and the hind gut. These are called the *Müllerian ducts,* from Heinrich Müller, German anatomist, 1820-1864. In the female the greater portion of the ducts of Müller develop into the Fallopian tubes. In normal development the two ducts should fuse caudally and form the uterus and vagina. A defect in this fusion gives rise to *anomalous uteri.*

The rarest form of uterine anomaly is called *uterus didelphys.* The uterus didelphys is double throughout even to the external ora. In most cases this anomaly is associated with a double vagina. It is very rare: most babes thus malformed have other malformations and cannot survive.

There is a case on record of a woman with a double womb and a double vagina who was five times pregnant.

De Lee cites a case in which an uterus didelphys with double vagina was pregnant in both compartments. Coitus may in some cases be hindered by the septum running through the vagina. Full term pregnancy is very rare, since the walls of the uterus are thin and usually rupture.

Sometimes only the upper portion of the body of the uterus is double: the septum is terminated before extending down to the cervix. This is

called *uterus bicornis*. If the septum runs into the cervix forming two cervixes it is *bicornis bicollis*.

Sometimes the uterus is normal save a thin septum in the middle. It is called *uterus septus*.

In some cases the vagina alone is septate; in other cases the cervix alone is septate. The *uterus arcuatus* has a depression in the middle of the fundus. It may cause transverse presentation or breech presentation.

A serious anomaly is *uterus unicornis*. In this case the uterus projects out laterally after the fashion of the beak of a bird. Only one Müllerian duct developed. There may be two ovaries, but one of them has no tube to connect it with the uterus. Uterogestation in a unicornis may be normal, but it is liable to abortion.

Coupled with uterus unicornis there may be a rudimentary horn having no outlet into the vagina. It is a blind sac, which may become filled with menstrual blood and form a cyst. As it is not connected with the ordinary route of the spermatoza, pregnancy in a rudimentary horn is extremely rare. A full term gestation is not recorded.

Pregnancy in a rudimentary horn may be considered worse than ectopic gestation. The treatment is celiotomy and removal of the whole sac, and sometimes of the whole womb if it be septic.

It is not ethical to remove such a live foetus before viability. The general principles govern this case which govern ectopotomy.

The fertilized ovum may be arrested in its course and become embedded in the ovary; in the ampulla of the tube; or in some part or organ of the abdomen. If the impregnated ovum wanders into the abdomen and first fastens itself there it is called primary abdominal pregnancy. This is rare. Most abdominal pregnancies are secondary abdominal pregnancies. In secondary abdominal pregnancy the ovum has first adhered to the *fimbriae tubae* or inside the ampulla and during its development has become detached and has continued its development in some part of the peritoneal cavity. It may fasten itself to the pelvic wall, to the outside of the uterus, bladder, rectum, intestine, spleen, liver, broad ligament, omentum, or collectively to several of these organs. Fortunately abdominal pregnancy is very rare. It is usually the result of rupture of the tube at an early stage. In most cases of rupture the foetus dies. Though relatively rare, cases are recorded of combined extra- and intra-uterine pregnancy. "Weibel in 1895 collected over 119 cases" (De Lee). In such case the prognosis for mother and foetus is bad. Ethics permits not the removal of the extrauterine foetus in order that the uterine pregnancy may go to full term. Both the intra-uterine and the ectopic foetus have the same right to life as the adult has.

The most common forms of ectopic pregnancy are ampullar, isthmic, and interstitial in the order named.

Ovarian pregnancy is rare. De Lee declares that there are 70 cases on record. More than three-fourths of tubal pregnancies have place in the ampulla.

The impregnated ovum may be forced out of the ampulla into the peritoneal cavity, and become a secondary abdominal pregnancy. In its

new site the ovum may continue its development into the later months of pregnancy. Rarely does it reach full term. Less than two hundred cases of full term extra-uterine pregnancy with living child have been reported. More frequent are the cases where the ectopic foetus develops into the later months of pregnancy. The common result of ectopic pregnancy is death of the foetus and grave danger to the mother.

Lewis and de Roulet declare that in tubal pregnancies about 60 per cent. abort; 40 per cent. rupture.

It is admitted by all that the longer the ectopic pregnancy continues, the greater is the danger to the woman. Therefore most authorities strongly advise immediate removal of the ectopic sac. A portion of the tube is usually removed as in salpingectomy. In the early stage of tubal pregnancy it is not a difficult operation. If the operation be delayed until after abortion or rupture has taken place, the woman's resistance has been reduced, and infection is far more liable.

According to Schauta, about 69 per cent. of the mothers die: few of the foetuses survive.

"The child is rarely, if ever, saved beyond a few hours or days. The best modern conclusion is that an ectopic pregnancy should be considered in the light of a malignant tumor and treated as such. After pregnancy has gone to term or nearly to term, the great danger to the mother is hemorrhage at time of operation; to avoid this, the surgeon would sometimes be warranted in postponing operation until the death of the child. A positive diagnosis in early ectopic pregnancy is a very strong indication for an immediate operation to avoid hemorrhage from a rupture." (Dr. E. C. Dudley, Chicago Medical College.)

"Any case of ectopic pregnancy at any stage of gestation, with or without symptoms, is a very present danger to the woman." (Lewis and de Roulet)

"There is no expectant treatment for a growing ectopic gestation. The 'explosive body' (Werth) must be removed from the abdomen as soon as possible." (De Lee)

"If ectopic pregnancy is discovered in the first stage, *i. e.*, before rupture, immediate removal of the tube is indicated." (Graves)

"The doctrine given in all the leading medical works at present concerning the treatment of extrauterine pregnancy is this:

"1. As soon as an extrauterine pregnancy is discovered, remove the foetus through an opening made in the mother's abdominal wall. Do not use electricity or the injection of poisons into the foetal sac, or the incandescent knife. Emmet and a few others approved of the use of electricity at times, but this is against the teaching of the great majority of writers at present. The reason for removing the foetus at once is that it is apt at any moment to cause rupture and fatal hemorrhage before surgical aid can be effective.

"2. In case of rupture with free hemorrhage and collapse the only operation advised is an immediate coeliotomy to stop the bleeding by ligatures. . . .

"3. If there is a rupture in which the bleeding is confined, and there is no collapse, do not operate at once, unless the haematocele increases steadily or shows signs of suppuration. Sometimes evacuation of the haematocele through the vaginal wall is possible.

"4. In the later months of an extrauterine pregnancy, whether the case is intraligamentous or abdominal, perform coeliotomy as soon as the diagnosis has been made, and remove the foetus, because there is always danger of sudden and fatal hemorrhage before the surgeon can reach the source of the bleeding." (Dr. Austin O'Malley)

The aforesaid opinion was written by Dr. O'Malley and published in 1906. The book was five times reprinted without revision. The last edition with which the author is acquainted was reprinted in 1921. In a later work Dr. O'Malley retracts the aforesaid opinion. Thus he writes in "The Ethics of Medical Homicide," first published in 1919:

"The ectopic fetus cannot, of course, be a formal aggressor because it cannot exercise either intelligence or will. It is not a materially unjust aggressor, because the only action it is capable of is to increase in size in obedience to the natural law of growth. It is not trying in any manner to tear the maternal blood-vessels. It has a right to its own life and a right to grow. Its growth may finally bring about a maternal hemorrhage, but just now it is not causing that hemorrhage. An aggressor is such only while there is an actual attack going on here and now, directed against the victim's life. The fetus is necessarily passive always, never aggressive in any sense of the term, until the actual rupture occurs. If it may be deemed materially aggressive when the actual rupture is taking place, the question becomes irrelevant, because at that time the fetus may be removed for other reasons altogether. If an insane man is in a room with a loaded revolver which he may not use against me, but which he probably will, I may not kill him in self-defence until he actually begins the aggression. The opinion expressed here is the contrary of the opinion I expressed, in 1906, in *Essays in Pastoral Medicine.*"

Lehmkuhl is also erroneously cited as an authority for the lawfulness of removal of the ectopic foetus. In his old editions he held such view, but in the revised edition published in 1902 he retracts his former opinion:

"Wilfully to induce abortion to save the mother from a present danger which may only be averted by the delivery of an immature foetus formerly to me seemed lawful, because it seemed no more a direct killing, that is, a wilful abortion in the theological sense, than in shipwreck to give up a piece of wood to a friend would be formal suicide. But now my former opinion must be rejected, and can not lawfully be followed in practice, as appears from the decree of the Holy Office."

In the aforesaid place, X Ed., Vol. I. pp. 501, 502, Lehmkuhl states the reasons which moved him to hold his former opinion. It seems therefore that the authority of the Church moved him to abandon his opinion:

"The foetus has a fundamental right to the vital requisite, its existence in the uterus, since nature established such condition for him.

"But in the stated circumstances may not that right be elided by the prior right of the mother? or, if you will, may not the foetus renounce his

right? and if he may, may we not say that he has renounced his right? He seems to have renounced it. For if we have the right to consider this existence in the womb as an extrinsic good necessary for the foetal life, he may renounce this good in favor of the maternal life nearly after the manner of a shipwrecked man who yields his piece of wood to a friend and abandons himself to the waves, soon to die; and in fact he should be said to make this renunciation, at least, in these circumstances in which danger of death without baptism is not increased, but rather lessened; for indeed in such case the existence in the uterus becomes for the foetus useless. But if we must regard the existence in the womb as an intrinsic vital element: nevertheless that which is attacked is not the living foetus, but something in which the mother has an equal right; and since the right of the foetus conflicts with the mother's right it is enfeebled, as for example a right to the common air in a case in which the available quantity is not sufficient for me and for my friend. Therefore this operation seemed essentially to differ from craniotomy.

"But it seems otherwise to the Holy Office, which considers this attack upon the vital element of the foetus the same as craniotomy, and holds it to be a direct killing of the foetus and therefore intrinsically unlawful.

"Therefore it follows that I acknowledge that the aforesaid arguments are not sufficient to establish the right of a physician to perform (therapeutic) abortion, but in conformity with the decision of the Holy Office I declare that this operation can not lawfully be performed."

Lehmkuhl yielded to authority. That same authority establishes the norm of Catholic ethics: the Church has a right to set up the moral principles in this field. It is not a dogmatic decree, but it is a law of conduct. It is based on the natural law. Lehmkuhl's reasoning is sophistical. The mother has no prior right. She existed before the foetus, but the same nature that gave her existence gave the foetus a right to exist in her womb, or wheresoever she conceived him. The rights are equal. The existence in the body of the mother is a part of the vital constitution of the foetus' being. Up to viability all his vital processes depend on it. The yolk sac, the allantois, the placenta are as necessary for him as his heart. To sever his connections with these as they ascendingly evolve is as fatal as to sever his aorta.

In the Ecclesiastical Review (Nov. 1893; Jan., 1894) a symposium of theologians and gynecologists offered their opinions on the present theme. The majority of the physicians were of opinion that the life of an immature foetus which endangers the mother's life should be disregarded in the interest of the mother.

The discussion then ranged upon the best surgical methods. It is clear that Catholic ethics controls not medical teaching and practice. But little that is of practical lawful use is relevant from the theologians. However it seems that in some of their opinions the false principle entered, that the ectopic foetus is an unjust aggressor. This pretension is evidently wrong. An aggressor may be formally or materially unjust. The formal unjust aggressor knowingly and wilfully invades another right.

To keep in line with traditional use of these terms in theological parlance, we give the name aggressor to an assailant.

A materially unjust aggressor is one who invades another's right by an action which formally is not under the control of the aggressor's mind and will. Examples:

1. An insane aggressor.
2. A child not yet come to the age of reason. It is recorded that a child of five years beheaded his older sister.
3. A man who mistakes another man for a beast or a thief.
4. A man who is unconscious that his act shall be nocive. The act of a somnambulist is of this class. Such also is a man who discharges a firearm with deadly effect, not knowing that the piece was loaded. Soldiers who in ignorance fire upon their own men are materially unjust aggressors.

To be a material aggression the act must be a controllable act. If compulsion by a *force majeure* enter into the act it is no longer a material aggression. Material aggression differs from formal aggression only by the absence in the former of mind and free will. If I be irresistibly blown by the wind against a man, and thus push him into the sea, I am not an unjust aggressor. I am not a cause. The wind is the cause.

If a man on board a ship develop a deadly contagion which threatens with death all aboard, he is not a material aggressor; neither may he be put to death. Nature is the agent. Now the foetus in whatever state we may find him has been placed here by nature. His site is not his material act.

"That the infant be an unjust aggressor is false: he in nowise acts to cause the mother's death, but by an act which not he but the mother exerts, he attempts to come to the light; and that attempt by the action of nature becomes the cause of the mother's death. The infant therefore is not an aggressor." (Rev. Jos. Aertnys, C. SS. R.)

"The infant can not be considered as an aggressor objectively unjust: he performs no action objectively unjust, when using his right, by nature's course, he is the cause of the mother's death. Therefore he should be compared to a carrier of contagious disease who infects, rather than to an unjust aggressor." (Noldin, S. J., Summa Theol. Moral. Vol. II, p. 365)

"The argument is not true, that the foetus be an unjust aggressor of the life of the mother. For without his coöperation, yea, without his will or act it has come to pass that he is placed in a condition which may endanger the mother's life. Therefore there can be no word of unjust aggression." (Capellmann, Med. Past., 2nd Lat. Ed., page 12)

Father Alphonse Eschbach (Am. Eccl. Review, Vol. X, p. 462) declares: "The opinion which holds the ectopic foetuses to be aggressors of the mother's life is devoid of all foundation, and can no longer be defended." The aforesaid opinion may justly be considered as obsolete.

Generally speaking it is lawful to kill an unjust aggressor, even if he be deprived of reason. The right of self-defense is not conditioned by the mental state of the invader. Thus declare De Lugo, Grotius, Lessius, Molina, and the common opinion of theologians. They except the case wherein the invader is known to be in the state of mortal sin, and the de-

fendant is in the state of grace. This is a merely academic case. Of course, only the necessary degree of defensive violence may be used. But this principle is not applicable to the unborn infant, because he is in no sense an aggressor.

Touching the difficulty of baptizing a foetus while it lies in the mother's incised abdomen, Dr. O'Malley declares:

"Baptism would be impossible in that case: the priest could not get at the foetus, he ordinarily could not even see it, and certainly no surgeon would permit the attempt. There would be no time for the attempt in a rupture case, even if the foetus could be seen; and there would be no advantage gained by baptizing the foetus in the abdominal cavity where the conditions gave time to do so. If it is alive it will live long enough for baptism after removal from the abdomen, provided, of course, it is baptized immediately in the operating room. That it does not breathe is not proof of immediate death. It is not unusual for a full-term child not to breathe for even an hour or longer after birth."

In the treatment of the present theme Catholic opinions are controlled by certain decrees of the Holy Office.

On the 31st of May, 1884, to the Archbishop of Lyon, the Cong. of the Holy Office sent the following decree:

"In a general assembly held Wednesday, May 28, the most Eminent General Inquisitors, together with me, examined the question proposed by your Eminence. 'Whether it may be lawfully taught in Catholic schools, that the surgical operation called craniotomy be lawful, when, if the aforesaid operation be not performed, mother and child shall die ;and if it be performed, the mother may be saved, but the child shall die?'

"All things having been duly considered, and mature examination having been made of the relevant writings of Catholic specialists, and also of the reasons by your Eminence transmitted to this Congregation, they answer:

"It may not be lawfully taught, (tuto doceri non potest).

"This decision fully confirmed in an audience on the same day by his Holiness, the Pope, I communicate to your Eminence, with my most humble greeting.

"At Rome, May 31, 1884.

"R. Card. Monaco."

This decree was amplified and explained in a decree addressed to the Archbishop of Cambrai, August, 19, 1889:

"In the year 1886 your Grace's predecessor submitted some questions to this Supreme Congregation touching the lawfulness of certain surgical operations akin to craniotomy. After careful and mature deliberation of the aforesaid questions the Most Eminent and Reverend Cardinals, with me, General Inquisitors, on the 4th day of the current month, give answer:

"In Catholic schools it may not lawfully be taught that the surgical operation which they call craniotomy be lawful, as was declared May 28, 1884, and also it may not lawfully be taught that any surgical operation be lawful which directly kills the foetus or the pregnant mother.

"I acquaint your Grace with this decision that you may make it known to the professors of the Medical Faculty of the Catholic University of Lille.

"At Rome, Aug. 19, 1889.

"R. Card. Monaco."

In 1898 the Bishop of Sinaloa, Mexico, proposed three questions to the Holy See.

"1. Is a premature delivery lawful whenever the woman's narrow pelvis renders a full time normal birth impossible?

"2. If the narrow pelvis is such that even a premature delivery is judged impossible, is it lawful to operate an abortion or perform the Caesarean section at the proper time?

"3. Is laparotomy lawful in the case of extra-uterine or ectopic foetuses?"

These *quaesita* are confused and unscientific. They are recited here merely to introduce Rome's answer, which was rendered by the aforesaid Sacred Congregation on May 4, 1898:

"To the first question:

"An accelerated birth is not in itself unlawful, provided it be performed for just reasons, and at such time and in such manner, that in the ordinary course of nature the life of the mother and of the foetus be provided for.

"To the first part of the second question a negative decision is rendered according to the decree of July 24, 1895, touching abortion. In answer to the second part, the woman may at the proper time undergo the Caesarean section.

"To the third question: In case of necessity laparotomy is lawful to deliver from the mother's body ectopic foetuses, provided, as far as possible, an earnest and timely effort be made to save the lives of foetus and of mother."

Pope Leo XIII approved the decision on the sixth day of May, 1898.

In the year 1902 Dr. Charles Lecoq, dean of the Medical Faculty of Montreal University, Canada, addressed to the Supreme Tribunal of the Holy Office the following question:

"Is it ever lawful to remove from the belly of the mother immature ectopic foetuses before the termination of the sixth month of gestation?"

On the 20th of March, 1902, Cardinal Ledochowski transmitted the following reply through Paul Bruchesi, Archbishop of Montreal:

"The answer (of the Holy Office) is, No; according to the Decree of May 4, 1898, in virtue of which the life of the mother and the foetus, as much as possible, must be earnestly and opportunely provided for. Touching the time, the Petitioner is reminded that no accelerated childbirth is lawful, unless in time and manner it be performed so that in the ordinary course of nature the lives of mother and foetus be safeguarded."

The interests of one life may not be sacrificed for the other life.

In ethics the two lives have equal rights. Any operation that is not opposed to their individual rights is not forbidden by this decree.

It is clear that this decree forbids the extraction of the unviable ectopic foetus, save where its vital status in the mother's body has become actually lethal.

The positive law of the Church has become clear and definite by the discussion of this important question.

In 1872, the Sacred Penitentiary, to a question:

"Is it ever lawful to perform craniotomy or similar operation which *per se* directly or indirectly is directed to kill the infant in the womb, answered:

"Let the petitioner consult approved authors, both old and modern, and act prudently."

The aforesaid Sacred Tribunal found it not of its jurisdiction to promulgate an official decision in the case. It answered a mere question of conscience. But the proper authority has now clearly and definitely decided the case in such a manner that their decision becomes the norm of medical procedure.

Touching this point Génicot (*Summarium Theol. Moral., n.* 233) has a lax opinion. He writes:

"In extra-uterine pregnancy also one should wait, if possible, until the foetus can live outside the mother's body. This is the decision of the Holy Office, March 4, 1893, and March 5, 1902. And if there be no hope of saving the foetus, and the mother is in present danger of death, even then it is not allowed to induce a direct abortion, or directly kill the foetus, as for instance by the electric current. But in an urgent danger it seems not unlawful to cut out the entire fetal sac, as though it be an abnormal and deadly tumour. In this case the foetus is not directly killed, but only indirectly." This opinion is endorsed by Noldin, *De Praeceptis,* 341, *b.*

"If it be doubtful whether the growth in the woman be a foetus or a tumour, and there be no danger in delay, one should wait until the foetus be mature: in no case is it lawful to destroy the putative tumour by the electric current or by other means; because by such means, the foetus, if present, directly would be destroyed. But if there be danger that by delay the mother may die, according to Father Genicot it is lawful to remove *as a tumour* the source whence the danger arises: for the certain right of the mother to her life prevails against the uncertain right of a foetus, of whose existence there is doubt."

Arregui (*Summarium Theol. Moral., Ed. 4ta,* 241) cites Génicot in the same sense:

"In an ectopic pregnancy it is lawful to exsect a tumour or cyst which is lethal to the mother, even though an immature foetus be included in the tumour; moreover if there be doubt whether it be a tumour or a foetus, and the doubt can not be resolved by the usual signs of pregnancy, it is lawful to exsect the whole sac."

Issues are confused in these theological opinions. Génicot seems to extend surgical liberty farther than the meaning which Noldin and Arregui give to his words. Génicot seems to consider a tube distended by tubal pregnancy to have the status of a tumour. Both constitute a present

danger to the woman's life, and hence may be exsected, provided the resulting death of the foetus be indirect.

If this opinion be true every tubal pregnancy could be removed, for medical science declares that every ectopic pregnancy is a present danger to the mother's life.

In 1927 the Reverend Henry Davis, S. J., of Heythrop College, Oxford, through his confrere, the Reverend H. S. Spalding, S. J., gathered a symposium of medical views pertinent to our topic.

In collecting the opinions, prominent surgeons were interviewed, a questionnaire was submitted, letters were sent to Catholic hospitals, with a request that replies be sent by the most capable and most conscientious surgeons on the several hospital staffs. Less than half the replies came from Catholic surgeons.

The question stated was as follows:

1. Catholic ethics permit the removal of a uterus, even during pregnancy, when there is a tumor threatening the life of the mother.
2. In tubal pregnancy, can it be said that there is a pathological condition which threatens the life of the mother, as the uterine tumor does?

Many of the replies went into a detailed description of tubal pregnancy, its causes, dangers, etc. Forty-one replies were in the affirmative, namely, that tubal pregnancy is a pathological condition; in other words, is a disease. Five of the answers were vague but seemed to favor the affirmative. Two denied the comparison with tumor of the uterus. One denied that there was a pathological condition in tubal pregnancy.

By far the greater number, Catholic and non-Catholic, expressed their firm conviction that tubal pregnancy is not only a pathological condition but is far more dangerous than cancer of the uterus.

1. "I would state absolutely that there is a pathological condition present in tubal pregnancy, which threatens the life of the mother exactly as in the case of tumor of the uterus."—J. F. GOLDEN, M. D.
2. "Tubal pregnancy is a pathological condition which always threatens the life of the mother, not as an uterine tumor would, but *per se*."—C. A. COBB, M. D.
3. "I do not consider tumor (of the uterus) as a positive indication for termination of labor, but I do (consider) a tubal pregnancy." —H. H. OZELIM, M. D.
4. "The answer to this question must be in the affirmative. I do not believe there could possibly be any professional controversy over this question."—J. W. NIXON, M. D.

5-6-7. "In our opinion, the proposition contained in Question No. 2 justifies an operation even more clearly than the condition as outlined in Statement No. 1, because not infrequently, a pregnant woman may have a tumor of the uterus and be delivered safely in a normal manner, or finally by Caesarean Section; whereas extra-uterine pregnancy is practically always fatal to the child and frequently to the mother. In short, our answer is, yes."—W. M. WOLF, M. D., F. P. HERFF, M. D., C. W. TAYLOR, M. D.

8. "In answer to No. 2, Yes."—GEO. LEACHBURY, M. D.

9. "Yes. In the majority of cases an extra-uterine pregnancy is even more threatening to the life of the mother than is a pregnancy in a uterus which is the seat of a tumor."—M. J. HENRY, M. D.
10. "Yes. While there have been instances of extra-uterine pregnancies going to full term with delivery of a living child by Caesarean Section, there are thousands upon thousands of instances where disease and even death have resulted from fertilization of the ovum outside the uterine cavity. In so far as the tube is not designed to receive and permit the development of the fertilized ovum, the occurrence of fertilization with arrest of the ovum at this point is, in my mind, surely pathological, and offers a definite menace to the health and even the life of the mother."—IRVIN ABELL, M. D.
11. "At no time, during the progress of pregnancy, wherein there is a tumor of the womb, is there any danger, in proportion to the dangers of a tubal pregnancy, as the tumor of the womb in itself does not cause sudden haemorrhage, but may cause a miscarriage or premature birth, whereas a tubal pregnancy causes a sudden haemorrhage, which endangers life immediately, and in which every minute is of vital interest to the patient, and this haemorrhage in itself causes death if not attended to. Further, in a tubal pregnancy, which is a pathological condition, any alteration of function causes pathology, and at no time, have I ever seen, and on very few occasions do the records show that a tubal pregnancy has ever gone to term. History does state that such a thing has happened, but the percentage is so minute, that we are not justified in allowing a pathological condition to attempt arresting itself without our assistance."—CARL B. YOUNG, M. D.
12. "Tubal pregnancy is abnormally located as the result of disease or some accident of nature, and is a menace to the life of the mother from its inception and is, therefore, in my opinion, a pathological process and threatens the life of the mother in a higher percentage of cases than does any uterine tumor of which I have any knowledge, except malignant tumors."—D. F. BARNES, M. D.
13. "There is a pathology existing which often kills unless interfered with."—DR. ——— (Houston, Texas.)
14. "In my own experience, and I am sure in the literature, tubal pregnancy presents a more dangerous prognosis than a pregnant uterus which is also the site of a tumor. The possibility of development of the embryo in a tubular pregnancy is almost nil if not entirely so. My view of tubular pregnancy is that it is a distinct pathological entity, resulting from an abnormal implantation and development in a structure which is not suitable for its normal growth and retention. In other words, the tubular pregnancy will abort with most grave and serious haemorrhage."—A. WATKINS, M. D.
15. "Tubal pregnancy is a physiologically malignant tumor in that it is so located that after a given growth-period rupture of an organ is produced and may occur in such manner as to cause a solution

in continuity of a blood vessel that will bleed the host to death. All cancers do not produce the death of the host. Some heal spontaneously without treatment.

"Personally, I cannot see any difference from an ethical viewpoint in the two conditions, except that it takes cancer longer to kill the host than it does a tubal pregnancy. The secondary cause of death in each instance is very often the same, namely haemorrhage."—D. C. Gann, M. D.

16. "Ectopic pregnancy is always a serious pathological, surgical condition. The mortality of this pathological condition, when not interfered with, is 69%, and on account of the imminent danger to the life of the mother, the extra-uterine pregnancy in the early months must be looked upon much as a malignant growth, and it is only from the seventh month of pregnancy, when the child is viable, that it has any claim to consideration."—N. F. Weny, M. D.
17. "As there is as yet no expectant treatment for a growing or ruptured tubular pregnancy, I regard it as a pathological condition endangering the life of the mother and future health should she recover. It is my humble opinion that on account of the high mortality, the removal of a pathological pregnant tube is as justifiable as the removal of a pathological pregnant uterus. They should be placed in the same category in the Catholic Ethics."—J. M. R. Dibrell, M. D.
18. "In tubal pregnancy the mother's life is in a great deal more danger than in uterine tumor. The pregnancy practically never goes to the viable time of the child. The mother is in constant danger from both haemorrhage and sepsis. She is an invalid as long as she carries the fetus."—John R. Beirl, M. D.
19. "I know of only one pathological condition of the pelvis that is more serious to the life of a woman than is tubal pregnancy. The chances for saving the life of the fetus are practically zero."—D. S. Wier, M. D.
20. "Tubal pregnancy is more menacing to the life of the mother than the various pelvic tumors in the presence of pregnancy. Some of the best obstetric authorities refer to the tubal pregnancy as 'an explosive body' (Werth) that must be removed at once; there is no expectant treatment (De Lee)."—Joseph R. Condon, M. D.
21. "In tubal pregnancy, there is an acute pathological condition threatening the mother's life."—D. E. Kelley, M. D.
22. "Tubal pregnancy is a definite pathological condition which greatly endangers the life of the patient."—Daniel Fr. Crowley, M. D.
23. "In tubal pregnancy there is certainly a pathological condition which threatens the life of the mother as the uterine tumor does."—Henry L. Lewis, M. D.
24. "Ectopic Gestation is pathologic . . . I would call it a physiological process pathologically located."—Eugene P. Hamilton, M. D.

25. "An extra-uterine pregnancy should be considered in the same category with a tumor of the uterus endangering the patient's life."—FRANKLIN S. NEWELL, M. D.
26. "In tubal pregnancy there is a definite pathological condition which threatens the life of the mother quite as certainly as does the average uterine tumor."—C. JEFF MILLER, M. D.
27. "Tubal pregnancy is preëminently a condition which threatens the life of the mother . . . The ovum in the tube behaves almost like a malignant growth."—J. WHITRIDGE WILLIAMS, M. D.
28. "In tubal pregnancy there is a pathological condition which threatens the life of the mother more acutely and more positively than in the majority of uterine tumors. I believe no obstetric authority will dissent from this view."—JOSEPH B. DE LEE, M. D.

Only one opinion declared that tubal pregnancy is not a pathological state.

It is regretfully admitted that the opinions of the theologians are not clear on this subject.

If the abdomen be opened for any cause, and an unviable fetus be found in the tube, Vermeersch clearly declares, "You are as it were forced to cut out the tube with the fetus, to save the mother."

Father Davis referred such a case to an anonymous eminent theologian, who answered:

"Moral Theology does not ask anyone to do absurdities. To ask a surgeon, who on incision for, say, a tumor or appendicitis, finds a tubal pregnancy, to ask him to stitch up the woman and wait till the tube bursts and then operate, is to ask an absurdity."

It may be considered a common opinion that it is lawful to exsect a tumour of the tube which threatens the mother's life, even though a doubt exists of the nature of the enlargement, because the certain right to life of the mother outweighs the merely probable existence of a fetus. The sac must not be directly cut, but exsected and carefully opened for baptism.

Touching the case in which a pregnant tube is still intact, Vermeersch shirks the issue, and gives no clear personal opinion. One may glean from his argumentation that he considers the pregnant tube a pathologic state.

Lehmkuhl clearly inclines to this opinion, and it seems to be the opinion of Prümmer.

An appeal has been made to the Sacred Congregation to give answer on this specific question: Is a pregnant tube a pathologic condition like unto a cancer of the womb?

In the present state of the case a surgeon may not be inhibited from exsecting a pregnant tube.

Though we concede this concession to the surgeon, we have not in mind to endorse the opinions of the authorities who establish a probable opinion of the lawfulness of such surgery. We merely concede that the authorities be of such character that the liberty of the surgeon may not be opposed.

Our own opinion is that pregnancy in a tube does not ipso facto establish a pathological condition. It sets up a state of impending danger, not of present conflict. Let us liken the case to another of similar nature. A woman, whose physical state is such that she can not undergo the Caesarean section, is pregnant. Her anatomy is such that by the natural course she can not bring forth her child. She is in daily danger of a rupture of the womb. Will any Catholic theologian say that in this case, before viability, the womb may be emptied? She can not carry her child to viability: the life of the mother is placed in an increasing danger: the child can not survive in the womb. We are describing an illustrative case in which we may posit conditions which make very probable the death of the mother, and the certain death of the unviable child. *Agat natura.* Before viability the delivery may not be effected. This law rests on the ethical principle of the natural law, approved by St. Paul, Rom. III. 8: We may not do evil that good may come. It is vain to endeavor to magnify the good, and to minimize the evil: a principle of the natural law may not be altered. The conceived fetus has all the rights of a human being. A man may not do to the unborn child that which he is forbidden to do to the born child.

An illustration may serve. A mother is in her home surrounded by her little children. One child is at her breast. Her home is isolated: she has no defender. A sadistic moron enters, and demands that the mother deliver to him for mutilation the babe at her breast. If she refuses he will slay mother and all the children. There is no help. Shall she yield, and save herself and all her children save one by the sacrifice of one? Shall she reason: This child shall die, if I refuse, and therefore I shall save the others by sacrificing a life that I can not save?

But it may be objected: The surgeon kills not the fetus in the pregnant tube: he only changes its site. This is false: he cuts off its respiration, circulation, and excretion. But they are useless to the fetus. This is false. *Hic et nunc* the fetus lives by them. No man has a right to anticipate the life destroying act of nature. It is murder to accelerate the very process of dying.

The whole question rests on the following principle. A foetus has all the human rights. Wherever the foetus be and in whatsoever state he be, no man has a right to deprive him directly of life or indirectly by removing the life-processes by which he lives. Now he lives: we have no right to remove his source of life, because at some future moment he may die. Neither may the mother's right be urged because at some moment, even imminent, she may be threatened with death. She may only indirectly suffer an immature foetus to be removed from an organ which not merely threatens her life, but which is attacking her life. I may kill a man who attacks with deadly intent, but not a man whose presence is dangerous to me.

Before abortion or rupture the diagnosis of ectopic pregnancy is difficult. Inexperienced operators often make serious mistakes: an unskilful examination may rupture the sac and cause serious, often fatal, intraperitoneal hemorrhage. Moreover, in private practice, when it is not possible

to place the patient in a hospital, and proper assistance and surgical facilities are wanting, even in case of severe rupture and hemorrhage, it is not advisable to open the abdomen. The accoucheur should administer from one-fourth to one-half a grain of morphine to relieve the pain and to prevent the aggravation of the hemorrhage by tossing.

So important is absolute rest for the patient that it is advisable to let the woman lie where she has fallen, until the hemorrhage abates sufficiently to permit her removal to bed. The patient should be kept quiet with feet elevated. Alcoholic drink should not be administered. Of course a skilful trained operator may be able to operate even in unfavorable surroundings.

When the ectopic foetus is at or near full term it should be removed together with the products of conception as soon as possible. At this stage, if alive, the child is viable, and removal from its misplaced nest increases its chances of life. The abdomen is opened as in the Caesarean section; the ectopic foetus is extracted from its sac; the placenta is removed manually; and the sac and placental site are packed to prevent bleeding.

The prognosis of ectopic pregnancy is bad. Expectant treatment increases the death rate of mothers. However, physicians sometimes exaggerate the unfavorable outlook in order to justify immediate operation on a non-viable ectopic foetus.

Some ectopic ova die, and are expelled by rupture or abortion: the patients recover without medical inspection or aid.

A rarer result is mole formation.

It has already been stated that by means of trophoblastic cells the foetus eats into the decidua and establishes itself securely there, and draws its nourishment from the maternal blood. When the ovum develops in its proper site in the uterus, it finds a thick decidua and mucous membrane with epithelial and connective tissue portions and a system of glands prepared by nature to sustain the erosive action of the chorionic structures.

Kelly (Operative Gynaecology), in the interval between the years 1889 and 1896 reports on the authority of Haines 40 operations for ectopic pregnancy after the seventh month of pregnancy. Ten of the mothers died. Twenty-seven of the infants survived the operation for periods ranging from a few moments to fifteen years.

Fifty per cent. of ectopic foetuses are deformed; few are perfectly developed.

Sittner (Jour. Amer. Med. Assoc., 1907) collected 179 cases of ectopic pregnancies which went to term. He advises the expectant treatment unless the mother's symptoms be threatening.

Schauta (Lehrb. d. Gyn., 1906) collected statistics of 241 cases of ectopic pregnancy treated expectantly: 75 mothers recovered.

"Extra-uterine pregnancy is quite frequent, and occurs also in the lower animals—the ape, cow, sheep, bitch and hare." (De Lee)

Hirst (Professor of Obstetrics, University of Pennsylvania) declares that an experienced obstetrical specialist may see from 12 to 24 cases annually.

Haines found fifty operations for ectopic gestation done after the seventh month: ten mothers died.

Küstner of Breslau operated on 105 cases in five years.

Sometimes twins are in the ectopic sac.

According to De Lee "combined extra- and intra-uterine pregnancy is not very rare, Weibel, in 1895, having collected over 119 cases. Penkert found 17 cases in 1912 and 1913."

The prognosis is unfavorable. Rarely does the woman go to term; and even at term death often results from hemorrhage or from sepsis. The more usual result from such a pregnancy if uninterrupted is abortion of the uterine ovum and rupture of the ectopic sac.

De Lee recommends removal of the ectopic pregnancy in the hope that the uterine ovum may go to term.

Such removal is ethically wrong unless the sac be ruptured or aborted. Human life is not subject to comparison of values. A living human foetus, even though a monster, may not be sacrificed to save all the human lives in the world.

In ectopic pregnancies, for the most part nature removes the cause of conflict between medical procedure and ethics.

"Before rupture of the tube or a hemorrhage into it, the diagnosis of ectopic gestation has hardly ever been made, because the tube is as soft as an intestinal loop." (De Lee)

"There are as a rule no subjective symptoms in ectopic pregnancy until there is rupture of the surrounding envelope. The patient usually passes her regular time of menstruation, and often considers herself pregnant. In the typical case the first symptom is a sharp lancinating pain in the side, which may be so severe as to cause the patient to fall. Pallor, small rapid pulse, and air-hunger follow, and if rupture is through the outer capsule into the abdominal cavity, or if there is abundant hemorrhage from the ostium of the tube, the patient may bleed to death in a short time. Catastrophies of this kind are, however, comparatively uncommon. In the majority of cases the patient survives the first attack, which may be so mild as to cause little apprehension. . . . One seldom sees an extra-uterine pregnancy in the first stage before rupture." (Graves)

"Before rupture or abortion has taken place, the diagnosis is usually not made, chiefly because there are no symptoms marked enough to lead the patient to suspect that her pregnancy, even if she recognizes it, is in any manner abnormal." (Lewis and de Roulet) Therefore the discussion: What shall be done with a pregnant tube before abortion or rupture? is mainly academic.

A ruptured or aborted tube is a pathologic condition which justifies whatever surgery be necessary to save the woman, but the foetus may not be directly killed.

When the ovum is arrested in the tube it embeds itself in the wall of the tube, which is unfurnished for the foetal development. There is in the tube but the merest rudiment of a decidua, a thin surface epithelium, little connective tissue, and no glands. Therefore the villi rapidly eat

their way into the musculature and blood vessels of the tube after the manner of a destructive neoplasm. The hypertrophy of the tube is usually insufficient to accommodate the growing ovum; and consequently a rupture usually occurs where the trophoblastic cells by erosion have weakened the muscle-fibres of the tubal wall. There are rare recorded cases where tubal pregnancy has gone to full term without rupture.

Fig. 128—Tubal Abortion. (Lewis and de Roulet)

Abortion is the more common course of ampullar pregnancy.

The erosion of the trophoblasts into the relatively large blood vessels of the tube always causes some degree of hemorrhage; hence irregular bloody vaginal discharges are one of the possible symptoms of ectopic pregnancy. When the full rupture takes place, the woman may fall in a faint and, if medical relief be not given, she may die in a few minutes or in a few hours. The best medical skill is sometimes ineffectual. The rupture kills by hemorrhage, shock or sepsis.

According to Lewis and de Roulet less than fifteen per cent. of tubal ruptures are of the extreme severe type. Nevertheless every case of ectopic pregnancy is extremly dangerous to mother and child.

"Continuation until near full term, with the hope of finally delivering by laparotomy a living child is fraught with danger of almost certain death to the woman, and offers only the meagerest hope of getting a child which will live more than a few days." (Lewis and de Roulet, *op. cit.*)

Most ectopic foetuses are deformed; most of those delivered alive soon die. These reasons, however, can not be alleged to found a right to deliver an immature ectopic foetus. The crime of murder is not conditioned by the physical status, social value, or other accident of the victim. "Thou shalt not kill" protects all humanity at every stage of its existence from the moment of conception until death.

In rare cases the impregnated ovum extruded from the tube may fasten itself to some organ or peritoneal surface. More frequently it forms a degenerate fleshy mass called a mole. These moles may also occur within the tubes or uterus in early death of the foetus. When the tube ruptures the blood escaping into the peritoneal cavity clots into a hema-

tocele. This may be absorbed together with the embryo, or it may suppurate. Infection is very liable. There is always danger of peritonitis in ectopic gestation. Repeated hemorrhages may terminate fatally.

In case of recurrent hemorrhage the general practice is to open the abdomen and clean out all the results of pregnancy.

In case of abdominal pregnancy it is advisable to open the belly and remove the foetus as soon as it is viable. Its condition is ameliorated by being taken from its unnatural resting place. While within the belly hemorrhage or dislocation of the placenta may kill it at any time. Full term ectopic gestations with living child are extremely rare.

Mummification of the foetus sometimes takes place after its death. The fluids of the foetal tissues are absorbed, and the withered, wrinkled foetus membranes, and placenta are compressed into a shriveled, dried up mass. Such mummies are retained for years within the body of the woman.

A rarer course of the dead foetus is lithopedion. Lime salts are deposited within the tissues, and gradually replace the tissues, forming a calcareous mass sometimes called "stone child." Such masses have been carried within the woman in a record case (Smith) for 60 years. Calcification of the foetus renders suppuration less liable, but does not eliminate it.

Saint-Hilaire, on the authority of Nebel, cites a case in Suabia where a lithopedion was, during 54 years, carried in the mother's abdomen. In the meantime she bore two children.

It may chance that the ectopic foetus may be erroneously diagnosed as appendicitis or neoplasm. What shall be done when the abdomen is now open and an unruptured ectopic foetus is found?

The diagnosis of ectopic pregnancy is not easy. Skiagraphy is not competent to determine it.

When an alien albumen invades the blood, nature produces *ad hoc* a proteolytic ferment to react against the invader, and to convert it into peptone and amino-acids. Abderhalden claimed that these ferments are specific; that is, a specific protective ferment is produced in the blood to reduce the specific substance which caused the ferment. Now in pregnancy the impregnated developing ovum throws off an alien albumen. Therefore if a specific ferment corresponding to the foreign body which the placenta throws off, be formed in the woman's blood it would be logical to infer that placentation had taken place. This is the famous Abderhalden (German chemist, born 1877) test. It is practically worthless in our present discussion. Many physicians of the first rank deny that there is a specific ferment of pregnancy. The test is very difficult; it can only be made in a finely equipped laboratory; it is subject to many errors of technique. Moreover it would not determine whether the pregnancy be normal or ectopic. Finally, appendicitis and neoplasms demanding surgical aid may coexist with pregnancy.

It would lead us too far afield to examine the differential diagnoses. They are difficult and uncertain. Clear distinctive symptoms of ectopic pregnancy are not found. There will be the cessation of the menses, morning nausea, frequent micturition, enlargement of the breasts, bluish dis-

coloration of vulva, etc. These symptoms do not locate the pregnancy. Consequently before rupture or abortion the diagnosis usually is not made. All normal women shrink from a surgical examination of the genitalia, and yet it is essential to determine an ectopic foetus. A skilful surgeon by a bimanual examination in the seventh or eighth week will find that

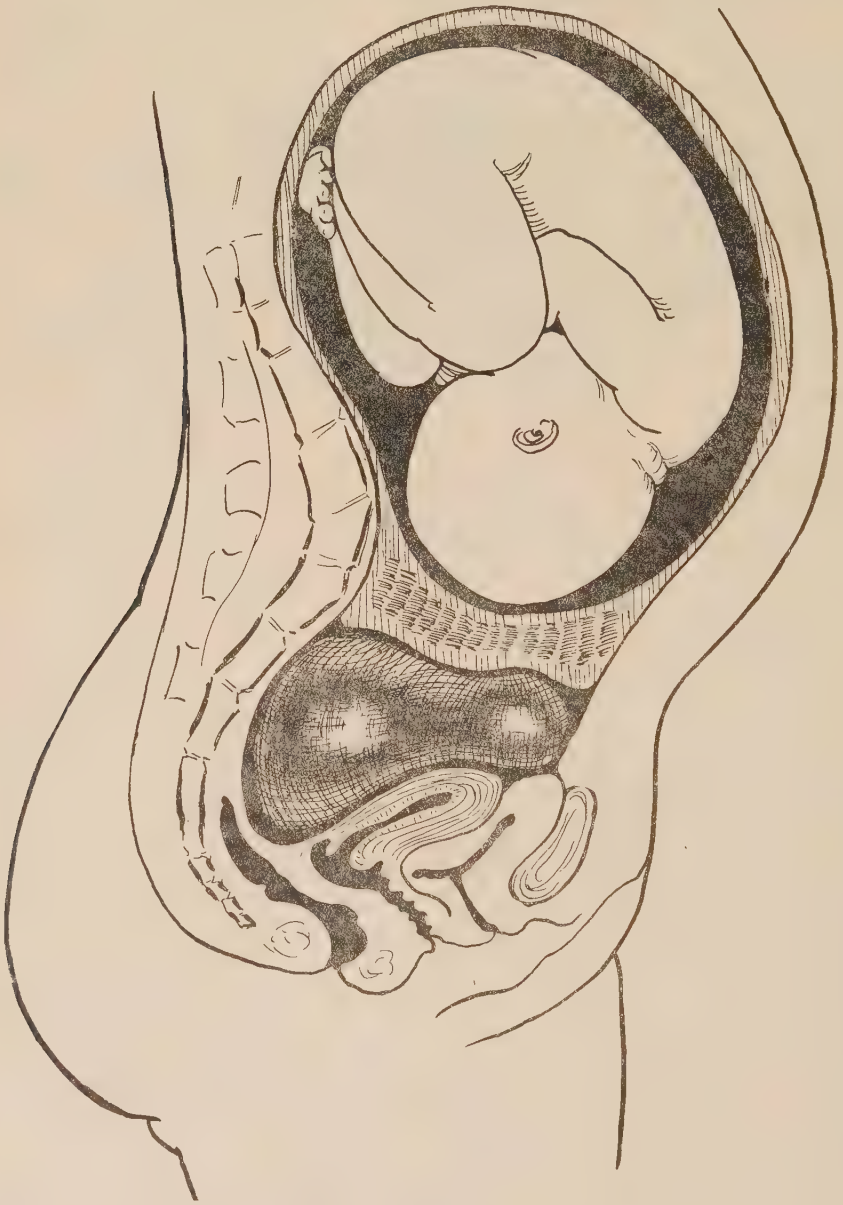

Fig. 129—Abdominal pregnancy complicated by ovarian cyst. (Lewis and de Roulet)

the uterus is not enlarging normally. He will be able gently to palpate the ectopic growth in one of the tubes. Its size will vary from a pigeon's egg up to a hen's egg.

General evidences of pregnancy, continuous bleeding and definite pains on one side of the uterus are strong presumptive evidence of tubal pregnancy.

Errors are made by the most eminent men. When the ordinary signs of pregnancy are present, pregnancy is presumed. When all the diagnostic symptoms have been duly considered, and a careful palpation has been made, if the physician decides that the woman suffers from appendicitis, neoplasms, a ruptured or aborted tube, or from a dead foetus, it is lawful to operate.

When the belly is opened various conditions may present themselves.

1. It may be found that the diagnosis is wrong. If a living unviable foetus, even ectopic, be found, it can not be removed from the body, unless its position in the body be less conducive to its life than an extraplacental nest. This could be found in case the foetus had ruptured the tube, and, though still alive, was being surely and quickly killed by the hemorrhage.

Nothing against the life of the child is ever allowed, but a change of site is allowed where it changes not to the worse the vital status of the child. It would not be contrary to ethics in every case to remove from the belly a ruptured or aborted foetus. It may thus always be baptized: its chances of life in the peritoneal cavity are practically nil: its presence there constitutes a present grave danger to the life of the mother. Data are wanting to authenticate a case where the aborted or ruptured foetus went to full term, and was born a living child.

The lawful procedure in case of a myomatous womb or of a placenta praevia has already been outlined.

In case of appendicitis with pregnancy appendectomy should be performed, but the pregnancy must not be directly disturbed. A fine report of such appendectomy is here reprinted from The Journal of the American Medical Association, Feb. 27, 1915, Vol. LXIV, p. 739.

RUPTURED APPENDIX AT FULL TERM PREGNANCY

C. J. Wallace, M. D., Duluth, Minn.

"Mrs. E. J. P., aged 24, German, housewife, married six years, mother of two children, aged 4 and 2 years, had typhoid three years ago. She has had recurrent attacks of appendicitis during the last two years, all very slight, however, and none during the previous eight months.

"I was called on Saturday night, April 19, 1913, to attend the patient, as she had expected, during childbirth. On my arrival at her home I found my patient sitting in a chair with her hands over her lower abdomen and complaining of severe pain down low, especially over the right side. She was placed in bed and prepared, and an examination made of the cervix, which showed a slight degree of dilatation, about ¼ inch; the head was not engaged, however, and I felt certain, as the result of my examination, that there would be no need for my services for some time. I went home, leaving orders to be called if any changes seemed to take

place. I was not called again until Sunday afternoon at 3 o'clock. I found my patient still in severe pain and learned that she had been so ever since I had left her the day before. She had a temperature of 103.6 F.; the pulse was 128. I then made a thorough examination and found the cervix just about as it was at the time of my previous examination, but, on close survey with my finger, I thought I felt, through the wall of the vagina, what seemed like an abscess located in the region of the appendix. I covered the ground very thoroughly and made a diagnosis of suppurative appendicitis with possible rupture of the appendix.

"The patient was removed to St. Mary's hospital and placed in bed with ice-caps over the appendiceal region, with the hopes of preventing any further trouble until after the child was born. On Monday, however, the conditions were no better, and with the temperature at 104, pulse 140, and slight dilatation, I could see no other way out than to go in and relieve the abscess and drain, at least. At 1:30 p. m. Monday I operated, doing a complete appendectomy, and cleaned out the pus which had gathered freely about the much enlarged vessels and ligaments which are at this stage of pregnancy far from the size we generally find them. Hoping to avoid later trouble I placed a rubber tube drain in the culdesac and one in the groin. The incision was closed tightly around the drains, especial care being taken to close the fascia so as to get a good union and avoid separating during the severe strain which was sure to come at the time of childbirth. It was quite difficult to get these parts together, and would have been impossible had I not made a transverse incision through the fascia, a fact which, I think, saved the situation.

"Tuesday morning the temperature was 99.3, pulse 88. At noon the labor pains began, and at 12:30 p. m. the patient was put to sleep and an 8 pound and 6 ounce boy safely delivered. We had no trouble with the wound. Everything kept its place. The following day the patient complained of severe pain in the right side, due, I think, to the operation and the large drainage tubes, which were still in place. Considerable pus drained from the wound, but the temperature remained about normal and the mother went on to complete recovery. She left the hospital May 4, together with her baby boy.

"One thing was very noticeable, and that was the dislocation of McBurney's point in 'so pregnant a woman.' It calls for some close calculating in locating the point for incision."

Myomectomy, oöphorectomy, trachelectomy, nephrectomy, mastotomy, and enterotomy have been performed upon pregnant women without interference with the pregnancy.

In other cases a slight jar, a nervous shock, lifting a weight, running a sewing machine, a rough ride, coitus, and sea-bathing may cause an abortion. A pregnant woman should never strain the region of the womb.

Adnexa tumors, pyosalpinx, hydrosalpinx, and ovarian cyst, may be mistaken for ectopic pregnancy, and may coexist with normal or ectopic pregnancy.

A normal uterine pregnancy with displacement of the uterus or with neoplasms may move the accoucheur to perform celiotomy. In the case

of displacement the case is clear. Spontaneous rectification in most cases takes place in the third or fourth month. If this fails and no manipulation may bring it about, celiotomy and hysteropexy are to be operated and the pregnancy allowed to go to term. Appendectomy and myomectomy are performed when necessary. No neoplasm whose removal shall be an indirect cause of the death of the foetus may be removed unless pathological condition of the infected organ is a present danger of death to the mother. Thus an unruptured pregnant tube may not be cut out on the assumption that its course is contrary to the life interests of the mother. Life is not a commodity that may be bartered. The right to life is only forfeited by a commensurate crime; and then only in accordance with the laws of human society. The fact that, in the main, medical science accepts not, in this point, the principles of ethics weakens in no degree the force of the ethical law. The unborn foetus has the innocent human adult's right to life. The Almighty has fixed his canon against foeticide as against homicide. Let us illustrate by an example. A mother with her infant in her arms falls into a pit in such manner that the baby rests upon the mother's respiratory organs, and is smothering her. The mother is rendered unconscious by the fall. Aid can not reach mother and child in time to save the mother from suffocation. The child shall *very probably* die of exposure. Small grappling-irons, a gaff, or some other instrument is at hand but in removing the child the instrument will kill it. Who will defend its use? The instrument may be used, even though danger to the child attends on its use, if it be the best means at hand, and if its use be not directly against the life of the child. The forceps has killed many children: it is the last resort before the Caesarean section: it may be used *with the intent to deliver the child alive.* The cranioclast may never be used on a living foetus.

A remarkable incident has recently been chronicled by the Boston Herald. A group of Alpine climbers bind themselves seriatim by a common rope for common protection. It is contemplated that if one slip the common bond shall hold him and draw him to safety. The man at the rear extremity loses his footing and hurtles over the ledge; he drags the next man with him, and thus man by man they slip from the ledge to the last man. By means of his *Alpenstock* he holds firmly for a moment, but realizing that he must be drawn into the fearful depth by the weight of the others, he cuts the rope, and saves himself by allowing the others to plunge to death.

Men differ touching this act. Some condemn the Alpine climber's sacrifice of the lives of his comrades on the ground that all had a common right to that rope. An accident had rendered the dangling men's right to the rope useless to them, but it had not conferred on the other man the right to place an act which in se is an indirect contributory cause of their death. A man may not lawfully for his own advantage deprive a man of a means of life on the plea that an accident will inevitably work the effect.

There is no aggression because by a *force majeure* the rope's traction upon the remaining man is not under man's control.

It can not be argued that the dangling men would tell him to save himself. They may not renounce their right to life: such a renunciation would be suicidal.

It can not be alleged that the severing of the rope takes nothing really effective from the doomed men. One may not formally coöperate with natural causes that are sure to cause death. The last gasp of a dying man may not be wilfully accelerated even to save another life. *Agat natura.*

The Fifth Commandment contemplates the general good. To protect the universal state of man the decree against homicide is made firm, without respect to the value of any particular life, or its duration. If it be allowed to man to place an act which of itself would cause a man's death to save himself from an inevitable common death, many errors would rush into man's state. Thus a man on a scaffold might sacrifice his fellow workmen in the face of the impending death of all. In such an act a man weighs his life against the life of another, and wrests the judgment in his own favor.

In the particular case of the Alpine climbers it might seem that in one case the result is several dead men and one live man; in case of his refusal to cut the rope the result would be several dead men. A comparison of these results would seem to justify the man's deed. But the law protecting human life must not be judged by one application. Is it better for humanity to make life so sacred that even such an indirect attack be unjustifiable? The author's judgment is in the affirmative.

A man has no right to enter as a contributory cause in an action proceeding from nature or from an accident in nature whose end is the destruction of human life.

However this case, even if decided in favor of the man who cut the rope, argues nothing for the sacrifice of an ectopic foetus.

1. In the case of the Alpine climbers death of all is inevitable if the rope be not cut: in ectopic pregnancy both foetus and mother are sometimes saved by the expectant treatment. What should we say of the Alpine climber if he cut the rope while his companions were clinging to a ledge of rock with even a faint hope of rescue?

2. The cutting of the rope deprives the suspended men of nothing intrinsically vital: delivery of an unviable foetus deprives the foetus of a vital organ. In this state of development the placenta fulfills the office of heart, lungs, and alimentary system.

The baptism of the foetus must always enter into the reckoning. Therefore in a case of rupture or abortion the mother's abdomen should be opened as soon as possible, so that the foetus may be baptized. But the mother is not compelled by the moral law to submit to this operation: she may refuse and await the course of nature. It would be nobler in her to undergo the greater risk of immediate operation in order to secure the baptism of her child.

A non-lethal mutilation of mother or babe would be allowed to save either life: it is allowable to sacrifice a member to save the life. Thus in dystocia where either life is in certain deadly peril the amputation of an arm or leg would be lawful.

Materialistic biology recognizes not the human individual in the unborn foetus, and therefore puts the birth of a man on the level of the birth of a brute. Any veterinarian rightfully would sacrifice a foal to save the life of the mare, etc.. but the birth of man is controlled by higher laws. Medical science's callous defiance of foetal human rights is a dreadful sign of the moral degeneracy of our times.

As aforesaid, it may occur that an ectopic foetus may be diagnosed as a neoplasm. Pursuant to this erroneous diagnosis the belly may be opened to remove the tumor. An unruptured tube may also be found while operating for other cause.

A remarkable case of transplantation of the ectopic foetus is reported by Dr. C. J. Wallace of Duluth, Minnesota. We reprint his own report:

"TRANSPLANTATION OF ECTOPIC PREGNANCY FROM FALLOPIAN TUBE TO CAVITY OF UTERUS.

By C. J. Wallace, M. D., Duluth, Minnesota

"Heretofore it has been the advice of our best men that when ectopic pregnancy was diagnosed during the early quiescent period, or when it has been discovered during an abdominal operation, it should be removed at once. This has been the rule followed for years. It has been accepted as the only thing to do. Why have we all these years been so willing to deprive these little children of the right to live just because they were started wrong?

"In this day of advanced surgery, with the art of transplanting different parts, and, in fact, organs of the body, I wonder at the escape of so important a procedure, entailing so little danger, as the transplanting of an ectopic pregnancy from the fallopian tube into the uterus, thus permitting the child to develop and be born as was its intention before its progress was obstructed.

"Before we go any farther let us look into the conditions and structure of the parts with which we are dealing. The anatomical structure of the fallopian tube is the same as that of the uterus of which it is a continuation—a serous coat, a muscular and mucous coat. The inner or mucous coat is continuous with the lining of the uterus and at its free extremity with the peritoneum.

"According to Edgar (The Practice of Obstetrics, by Clifton Edgar, 3d ed. p. 362) the pathology of ectopic gestation is in part as follows:

" 'This includes changes in the ovum, foetus and uterus. The gestation sac is formed from the coats of the tube wall. The muscular tissue, instead of undergoing hypertrophy, often tends to disappear.

" 'The attachment of the ovum does not differ from that in normal uterine pregnancy. A placenta forms, but the decidual structures are rudimentary; so that the chorionic villi penetrate readily into the gestational sac as far as the peritoneum.

" 'If the foetus does not die, its tendency is toward poor development, and the various deformities and diseases noted in intra-uterine foetuses.

" 'Exceptionally survival occurs and the child may be well developed. The collateral changes in the uterus during ectopic pregnancy are the same to a certain extent as those found in normal pregnancy, even the formation

of a decidua vera. If the ovum dies these changes are arrested; otherwise they progress, although at a much slower rate than in intra-uterine pregnancy. The deciduae, however, do not keep pace with the uterus and are usually thrown off *en masse,* simulating abortion. Exceptionally they are retained to term, when so-called false labor occurs.'

"Thus we see that the early gestation in the tube is practically the same as in the uterus with the exception of its chorionic villi which extend deeper, or rather through into the muscular wall—due to the thinness of the parts in the tube.

"Up to a certain point the tubal gestation is identical with the intra-uterine gestation. Up to a certain point the uterus keeps pace with the tubal gestation and actually forms a decidua, enlarges, softens, grows darker in color, and in fact takes on all the early features of pregnancy.

"It is playing the part of a disappointed hostess. It had expected and was fully prepared to receive the fecundated ovum had it not been delayed. Even then it seems hopeful, and continues to develop, though slowly, and if the ectopic pregnancy goes on to full term the uterus will be seen at that time to be as large as a four months' natural pregnancy.

"Does it not look possible then for an early tubal pregnancy to be transplanted into the uterus where everything is ready and waiting for it?

"Nearly every surgeon who has done any great amount of work has come upon unsuspected cases of ectopic pregnancy while in the abdomen for other purposes. So far as I can learn, every one of these has been removed, together with the tube, without even an attempt having been made to save either. This has been the proper thing to do. Everybody did it. In some cases it is the only thing to do yet. Early diagnosis of ectopic pregnancy is next to impossible unless it is accidentally discovered. And until someone finds a way to make a more definite diagnosis it will continue to be the method. However, when we do find an early case, where the tube is still in a healthy condition, not too badly distended, and all things favorable, I think we should make a supreme attempt to save the life of the growing child by opening the tube carefully and dissecting out the pregnancy intact and transplanting it into the uterus where nature intended it should go. It can be very quickly done. It does not endanger the life of the mother and may be her only chance to bear a child. In support of this theory I wish to report a case which will show without doubt that it can be done.

"September 13, 1915, Mrs. W. J. W., age 27; housewife; American; of good appearance with dark complexion; menstruation regular; married five years; no children; no miscarriages; constipated; urine normal; nervous; pulse normal; temperature normal. Family history negative. Personal history negative except that she had been told by one physician she had a fibroid in the posterior wall of the uterus. I found this to be true. She was very anxious to have children. Her husband was a fine, clean, well built man, of good habits.

"September 15, 1915. Operated on for fibroid and when abdomen was opened, we found an ectopic gestation in the left tube at outer part of isthmus. The tube was very soft and healthy, enlarged to the size of a

walnut but not distended. The uterus showed the same shade of darkening color.

"The fibroid was about the size of a large hen's egg and extended into cavity of uterus. On removing the fibroid I was compelled to make a clean cut incision encircling the tumor and into the cavity of the uterus, extending down to and involving the inner os. Knowing their anxiety for raising a child, I decided to try, at least, the only thing at hand—to transplant the ectopic pregnancy. I knew it could be easily removed from the cavity of the uterus if it did not grow to the wall and be retained and nourished to full development. Had it failed to attach itself it could have easily been dislodged by the use of a curette.

"However, I was not called upon to remove it as all went well. The tumor removed, I left the uterus protected while I carefully opened the tube and dissected the pregnancy out intact, being careful not to injure the sac in any way by keeping wide away and including part of the tube-wall. It came away very easily and was in size about equal to a large olive. It was at once placed within the cavity of the opened uterus and caught by two of the sutures of the inner row of plain No. 1 catgut used in closing the wound in the uterus. The tube was closed in like manner and left in place. The patient was watched carefully for any hemorrhage, vaginal discharge, or signs of trouble for two weeks with no symptoms whatever.

"She left the hospital on the 14th day after a complete recovery. The pregnancy went on normally to full term and resulted in the natural birth of a fine boy, fully developed and without a scar, May 2, 1916.

"No doubt the raw surface of the edges of the wound in the uterus was instrumental in the perfect attachment of the transplant. They gave a good source of blood supply to the raw surface of the detached sac or tube-wall, thus enabling it to adhere readily.

"I have not the least doubt that many such transplanted ectopic pregnancies will be reported in the near future.

"We may and will have failures in this as in other transplantation procedures, but there is not the danger involved in this transplantation that there is in many of the others. Certainly it is worth the most extreme effort in favorable cases. At this time it is of course difficult to differentiate the favorable case and this matter must be left to the judgment of the surgeon. The condition of the tube and surrounding circumstances such as the stage of development, inflammatory conditions, adhesions, displacements, and wishes of the mother must all be considered."

In a note to the author Dr. Wallace declares:

"There is no reason why it can't be done. It has to be at a certain stage of development, at least, during the second month."

Dr. Wallace's noble operation is most conformable to Catholic teaching: it is an honor to medical science. His declaration, however, that there are conditions in which a live ectopic foetus must be sacrificed is abhorrent to Catholic ethics. The inference at the end of the report that the fate of the foetus rests on the mother's wishes is misleading. The mother who consents to, or counsels the removal of an ectopic foetus, save

in conformity with the principles of moral theology, is an accomplice to abortion. Good faith may make her complicity merely material.

The advice of a physician may convince a pregnant woman that the immature foetus must be ejected from the maternal body. In many pathologic pregnancies this is the usual course. The suffering woman entrusts herself to her accoucheur. Judged by the true standard of Catholic ethics the majority of physicians are abortionists. Many of these are in good faith: they follow the teachings of their masters.

Hence many Catholic women in good faith submit to unlawful operations. Where it is clearly foreseen that to advise against the operation will be without effect, it is prudent and lawful to leave the woman in her good faith. But this good faith must not be readily presumed; neither should cowardice or a respect of the person of any one hold back the true advice in the case if there be a reasonable hope of preventing the foul deed.

The whole weight of true ethical teaching should be employed in the confessional; in the pulpit; in the class of Christian doctrine; in books of Christian ethics to furnish the people the true principles of marriage and motherhood. It is a sad tragedy that the married should enter the important state of matrimony ignorant of its grave responsibilities. The reticence, the holy reserve that veils the sexual life hinders not the prudent instruction of the people opportunely and in the proper manner. To drag sex instruction into the class room, especially in our degenerate system of co-education, is unwise. The following declaration of Dr. Frank P. Davis, though somewhat overstated, is true in principle:

"The greatest producer of sexual crime and destroyer of virtue ever conceived in the mind of man is the co-educational school. People who would not permit their pigs of both sexes to run together think nothing of their boys and girls attending school together, and being in each other's company until late hours at night. I know many good people who are very careful to lock up the hen coop at night, and count the chickens to see that they are all in, who never know when their young daughters come home or what company they may be in. The children are not to blame. They were just unfortunate in the selection of their parents. There are a few facts so well established that leave no room for argument. Young girls, while they are menstruating, should not be in the company of men and boys. Children of both sexes should be in charge of female teachers until they reach the age of puberty. After puberty girls should be under female teachers and boys under male teachers. An almost ideal system of schools was that of the Cherokee nation. In the National Indian schools the sexes were separated. As the schools were some distance apart, there was no opportunity for the children to make a love affair of their school days. There were no little Cherokee maidens wearing tube skirts and low necked waists, their faces painted in glaring colors, attending the national school."

It is well proven by experience that young children may be together at school and in social life up to about the twelfth year. We may say that no great danger threatens before their graduation from the grammar school. But coeducation in the high school is unwise. Leading educators

of all countries bear witness that coeducation in high schools is a cause of much unchastity.

The foremost educators of our times are positively opposed to coeducation in high schools. Prest. Stanley Hall of Clark University, from an accurate analysis of the biological divergence of the sexes, from their different physiological functions, and from the subtle patent psychological sex tension declares that, "incessant and prolonged familiarity wears down the idealizing influence to the dull monotony of daily routine."

Dr. William Lee Howard charges the high schools with much immorality. He quotes Dean McCormack of the Episcopal Church of Pasadena as authority that there were six pregnancies in the Pasadena High Schools in 1908.

Dr. Laura A. C. Hughes of Boston pleads for the segregation of the sexes in the schools. She charges the schools with gross immorality.

Coeducation is condemned in England. Rev. Dr. Burns of Plymouth represents English opinion when he declares:

"Nature demands the separation of the sexes early in life."

The President of the English Private Schools Association of London declared:

"It would be impossible to carry out coeducation without enormous dangers, as is shown both in America and here."

In the ferment of the pubescent period nature impels the youth to separate: we do violence to nature by congregating them in school life.

Cardinal Gibbons and Bishop Spalding were strongly opposed to coeducation.

Games such as basket-ball, tennis, etc., should be forbidden to mixed groups of adolescent boys and girls. They unduly stimulate the sex instinct.

The general teaching of sex hygiene in the public schools will always be a mistake. Such method would weaken the innate sentiment of shame, which is one of the strongest bases of chastity.

Feminism is the curse of our times. St. Paul (II. Tim. III, 7) well describes this group of "silly women laden with sins, led away by divers lusts, ever seeking new opinions, and never able to come to the knowledge of truth." Having in large part impiously exempted themselves from the noble functions of motherhood, they are wandering fires. By means of an aggressive propaganda they afflict us with false eugenics, a false idea of temperance, false notions of social uplift, a false idea of education and other abominations.

The Women's Christian Temperance Union has appropriated $10,000 per year to endow a chair of Sex Hygiene at the University of Iowa. They contemplate to campaign for sex hygiene courses in all public and high schools.

This teaching makes common that which should be sacred. It heightens sex consciousness and sex incentives at an age when both should be quiescent. But all teachers should be competently equipped with sound scientific sex knowledge. It would be well if every normal teacher were given a sound course in higher physiology, such as is given to the training nurses in high class hospitals. Such scientific training is edifying. Both professor and pupil feel that they are in the august sanctuary of nature. The great life processes are viewed as the masterpiece of the Creator. Instinctively one feels that it is dishonorable, unscientific, ignorant, to drag these noble conceptions down into the nasty mire of eroticism.

Progress in true science ennobles the ideas of the physical and moral laws. Chastity is seen to rest on a physical and ethical basis: its evaluation, its beauty are enhanced.

If our teachers could be thus trained they could direct the awakening impulses of adolescent youth without rending the veil. They could privately and discreetly give advice supplemental to the proper home advice. They could observe and check dangerous movements, and fashion the plastic characters of youth according to the eternal ethical standard. They would have prestige with their scholars; they could prudently answer the questions which are timely, and counsel reserve in other matters until "time and place should adhere."

Ectopic pregnancy may present itself in various phases. If diagnosed before rupture the only lawful course is expectant treatment. The patient should be placed in a hospital under constant observation with all preparations constantly ready for immediate celiotomy when the sac ruptures or aborts.

"Without doubt the outlook has been painted too dark, for very many ectopic ova die, are expelled from the tube as abortions or by rupture, and the patients recover without a diagnosis having been made. Many women recover under expectant treatment but, of course, all the children die." (De Lee)

Lewis and de Roulet place such recoveries as less than 15 per cent.

If the belly be opened in an erroneous diagnosis and a living ectopic foetus be found, if Wallace's rare operation of transplantation of the foetus into the uterus be impossible, the abdomen must be closed, and the expectant treatment employed. Such procedure is clearly demanded by the ethical law, but it has not the endorsement of medical science. Therefore the ethical counselor should be prudent in giving advice.

Undoubtedly a surgeon who removes an ectopic sac in such case may be presumed to act in good faith. Before the opening of the abdomen this good faith may not so readily be presumed. To counsel against a procedure which has almost the unanimous testimony of medical writers in its favor, and which is approved even by eminent Catholic theologians, would be inefficacious, and might destroy good faith. If the surgeon

throws the moral responsibility on the aforesaid counselor, or if the surgeon is open to conviction, then the decision should be against the removal of a living unviable foetus from the maternal body.

After rupture or abortion of the tube the most usual clinical course is surgery. At such point it is lawful to remove the foetus, but never by direct destruction. The usual operation is salpingectomy. The severe hemorrhage of the woman justifies this course. A diseased state of her oviduct is threatening her life; therefore the offending member may be removed.

An ideal case which may be met in rural districts is thus described by Lewis and de Roulet:

"What shall one do in private practice when he is called to a home to attend a woman in the condition due to the severe type of rupture, away from help, and far from proper surgical facilities? First he should give morphine hypodermically and should keep the patient in a reclining posture with the feet elevated. If she has fallen on the floor, let her stay there until it is safe to move her into bed. If the physician is a trained operator and can get aseptic conditions, he may operate as soon as he can get these conditions and proper assistance. If a hospital is near and the road is smooth he may remove her there.

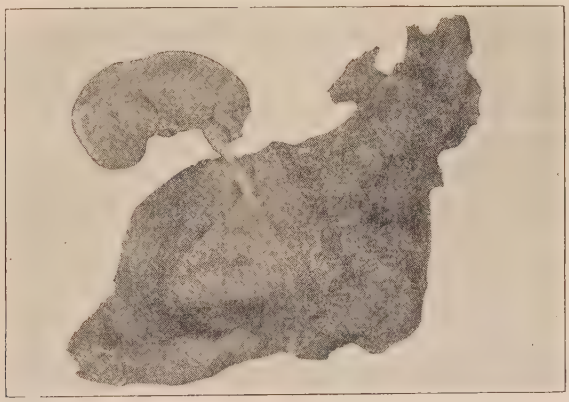

Fig. 130—Ruptured Tubal Pregnancy with cyst.
(Photo by Madge Walsh)

"It is not advisable for an inexperienced operator, without proper assistance and surroundings, to rush into the abdomen in order to stop a hemorrhage which has in most instances already stopped by the time he arrives on the scene. The danger from increasing the hemorrhage and the danger of infection with peritonitis are, under such circumstances, greater than expectant treatment with morphine and absolute rest."

De Lee's advice is very valuable:

"The operation should be undertaken only by one skilled in abdominal surgery, because complications, hemorrhage, injury to intestine, ureters, etc., are very common."

"At or near full term whether the foetus is alive or dead, one should remove it and the products of conception as soon as possible. If alive it is viable and has better chances if removed from the belly than if left to grow larger." (Lewis and de Roulet)

If the ectopic foetus be extracted, it should be baptized at once. The envelope should be carefully incised and water should be applied whether by infusion or immersion with the form of baptism. In doubt of the existence of a living human foetus a conditional form of baptism should be used, *si capax es.*

The religious obligations arising out of such cases have been clearly promulgated by Canons 746, 747, 748 of the Codex Juris Canonici.

CANON 746.

"1. The unborn infant must not be baptized in the womb, as long as there is a probable hope that being born in due form it may be baptized.

"2. If the infant's head is born, and there be imminent danger of death, let his head be baptized; if he survives he is not to be conditionally rebaptized.

"3. If he presents another bodily member, in case of danger, he is to be baptized in this member; but in this case, if he be born alive he is to be conditionally baptized.

"4. If a pregnant mother die, the foetus should be delivered by those on whom such office devolves: if it surely be alive, it should be unconditionally baptized; if doubt exists whether it be alive, let it be conditionally baptized.

"5. A foetus baptized in utero, after delivery is to be conditionally rebaptized.

CANON 747.

"Care must be taken to baptize all abortive foetuses, at whatever time they may be brought forth: if they be surely alive they should be unconditionally baptized; if it be doubtful, whether they live, they should be conditionally baptized.

CANON 748.

"Monsters and unnatural births must always be baptized, at least conditionally: in doubt whether the monster be one human individual or more than one, let one be unconditionally baptized; let the others be conditionally baptized."

In a case like the Siamese Twins or the Blazek Twins there is no doubt of two human individuals, and there would be two unconditional baptisms.

MONSTERS

Simplicio and Lucio Godina, natives of the Philippine Islands, made a tour of the United States in 1925. They were born in the first decade of our century and enjoy very good health. They are pygopagi,—joined at the hips.

They are devoutly religious and feel that it was the will of their Creator that they should be joined. They are not daunted by the opinion of many doctors that when one of them dies the other will live only a few moments.

"United we stand, divided we fall," Lucio smilingly told a newspaper reporter. "Thus we are and thus we shall remain," added Simplicio. "We know we have two souls and two consciences and there is no doubt about us being two people. We do not think the same thoughts at the same time, and neither are we always entirely in accord on various things. But we feel that we do not want to be separated. We have no fear of death because we have been assured that the operation would be comparatively simple. But we are happy as we are; we are content; why should we do such a thing?"

The classic treatises on Teratology, the science of monsters, are Traité de Teratologie by Isidore Geoffroy Saint-Hilaire (with Atlas) (1837), and Die Missbildungen des Menschen mit Atlas by Friedrich Ahlfeld (1880).

The simple rule is given by Saint-Hilaire, that two human heads, though there be one body denote two human individuals: one head, though there be two bodies, denotes one person. Saint-Hilaire denies a separate individuality to all parasites. According to him their organs are always imperfect. There is no spinal column, no spinal marrow, no nervous system, no muscular system, no individual circulatory system. The parasite is nourished by the being on which it is grafted, after the manner of an accessory member. The being on which the parasite lives is called the autosite.

Sometimes the parasite by the closure of the ventral laminae lies within the peritoneum of the autositic foetus,—*foetus in foetu*. Rarely does such an autosite reach maturity. Nevertheless there is preserved a specimen of an autosite born in Sherbourne who carried a parasite in his peritoneum until his death in his sixteenth year. Bornhuber of Passau (1846) records the finding of a debased foetus in the peritoneum of a man of fifty years of age.

These moles are not human individuals. Their bodily members and organs are most debased. They are mere tumors, developed from an embryonic fault of nature. They are nourished as tumours.

Parasites that are exteriorly attached to the autosites may sometimes reach a considerable degree of development. Schenk von Graefenberg (1609) reports a parasite attached by its neck to the autosite. The parasite was well formed save that it was acephalus.

The celebrated Chinese of Canton (1821), described by Pearson and Livingston, had a parasite attached to his breast. It was acephalic, attached by its neck to the autosite. It was otherwise well formed, but diminutive. It had no independent movements, but the autosite felt the effect of actions exercised upon the parasite. The autosite declared that, when a member of the parasite was pinched or pricked, he, the autosite, felt pain in his corresponding member. This fact lacks confirmation. The autosite would not permit a sound to be introduced into the penis of the parasite: the parasitic anus was imperforate. It seems certain that the parasite was not a human individual.

Sometimes an amorphous mass (acardiacus amorphus) is a twin foetus of a normal foetus.

All the acardiaci have a common placenta and one chorion. There are usually two amnions. The insertion of the umbilicus of the abnormal foetus is usually velamentous.

The foetal life processes of the normal foetus nourish the acardiacus. The acardiacus never has a heart; it has not the human form; all the main organs of the body are wanting; the alimentary canal is short and has no thoracic nor anal opening; there is no spinal column; there is a human skin, hair, vestige of a liver.

In the acardiacus reported by Clark (1793) the legs and feet were imperfectly developed: its skin and legs were the only indication of its human origin.

Klein's (1793) acardiacus had a mal-formed peritoneum, extending downward from the plane of the umbilicus. It contained a small stomach, rudiments of a blind oesophagus, a rudimentary intestinal canal, ureters, a small uterus and vagina, mal-formed oviducts, but no ovaries, vestige of a kidney, veins and arteries, but no heart.

There is a genus of monsters, classified in different classes according to the degree of the monstrosity. The generic peculiarity is the defective development of the trunk. The head is often well-formed.

When the monster has the legs and feet more or less fused and the pelvis imperfectly developed it is called a *symmelus*. If the fused legs terminate in one foot it is an *uromelus*. The *sirenomelus* has no foot: the fused legs end in a stump.

Sometimes the fused legs taper off into a form faintly resembling the tail of a fish. The name "mermaid foetus" has been suggested for this monster. The appended cut is from an X-Ray by Dr. A. B. Dawson of Loyola University. His theory is that the embryonic aorta failed to divide and establish two femoral arteries. Persisting as one artery it drew everything with it.

Such monsters, if living, should be unconditionally baptized. The symmelus also should be baptized as a human individual.

Fig. 131—Symmelus. (G. Saint-Hilaire)

The *celosomus* is a monster with eventration, fissure, or absence of the sternum, with more or less protrusion of the thoracic and abdominal organs. They are often born alive but can only live a few moments. They are proper subjects of baptism.

The *exencephalus* has the brain protruding through, or entirely outlying upon, a defective cranium.

In the *derencephalus* the brain protrudes through the bifid cervical vertebrae.

Saint-Hilaire reports an authentic case of a species of exencephalus (proencephalus), which lived four days. If the exencephalus be alive it is a proper subject of baptism.

The *anencephalus* is a monster foetus without a brain. A tumour may occupy the place of the brain, or there may be a mere defect of all trace of a brain. The medulla spinalis may be wanting.

It seems that the baptism should be conditional.

In the *rhinocephalus* the nose and orbital processes are anomalous. The eyes are sometimes set in a fusion of the two orbits, obliterating the nose. The rhinocephalus may be a *cyclops*. There is a doubt of its human personality.

Fig. 132—Mermaid Foetus.
(From X-Ray by Dawson—Photo by Madge Walsh)

One of the rarest of foetal monstrosities is the *acardiacus acormus*. In this type a human head exists without a trunk. There is no case recorded wherein the head is perfect: the aberrations range from nearly normal to a mere mass, faintly resembling a human head. There are sometimes found vestiges of the thoracic organs; in other cases the head surmounts a sac in which the merest rudiments of a heart and of the abdominal organs have been found. The acormus is a twin monster having no proper umbilical cord but receiving his foetal nourishment from veins which are in direct communication with his twin. That such monsters have been born is attested by Meckel (1770), Lycosthenes (1557), Rudolphi (1816), Johann Müller (1883), Paulitzki (1834), Barkow (1854), Ahlfeld (1880).

The baptism should be conditional.

The *acardiacus acephalus* is a twin monster without a head. It is the most frequent of the acardiaci. The members of the trunk are always in some degree abnormal. The lower part of the trunk is usually better formed than the thorax and upper extremities. Often the acephalus has a fissure of the breast. The heart and lungs are in most cases wanting: in rare cases rudiments of them are found.

The intestinal organs and internal sexual apparatus usually are well formed.

Fig. 133—Cranioschisis with encephalomeningocele—there is congenital fissure of the cranium with protrusion of the cerebral membranes and brain substance through the skull. (Photo by Madge Walsh)

The trunk may be armless; it may have no thorax and but a rudimentary peritoneum. The umbilical cord is usually furnished with two arteries. In the acephalus there is grave doubt of human personality: however conditional baptism should be administered.

An hypertrophied clitoris is ranked in the list of monsters by Saint-Hilaire and Ahlfeld. This is usually a feature of hermaphrodism, which is also considered by them as a monstrosity.

Both for biologists and for theologians a doubtful sex is classed as masculine. Subsequent examination may reverse the presumptive judgment.

"Never have there been found in a human ovum an individual being with testicles and ovaries lying in juxtaposition. Neither in enzygotic twins nor in twin monsters has there been found a diversity of sex. These foetuses are always of the same sex. This certain fact must arouse a grave doubt touching the reported finding of male and female sexual glands in the same individual. In reality there is as yet no perfectly authenticated instance recorded of the simultaneous existence of an ovary and a testicle. The existence of a tumour near a clearly recognized sex gland has repeat-

Fig. 134—Anencephalus—monster-fetus without a brain.
(Photo by Madge Walsh)

edly led the explorer to believe present another sex gland without sufficient examination of the character of the doubtful tumour. In later time in a more scientific method men have sought to demonstrate the existence of the ovary through the (Graafian) follicles, and the existence of the testicle through the seminal cells; and this method has never yet found a certain ovum existing with semen in the same individual.

"But men say that in order to establish true hermaphrodism both sex glands in the one individual need not function: it suffices thereunto that a functionless ovary exist together with a functioning testicle, or vice versa. In this reckoning men fail to note that the existence of the ovary can only be demonstrated through the proving force of its ova. Otherwise it always remains possible that the doubtful body may have another origin.

"A form which externally resembles a testicle or an ovary, but which neither histologically nor functionally manifests the nature of such glands, and which is deprived of the normal ducts of these glands, can not be identified as such gland.

"From the brute animals proof is sought to establish true human hermaphrodism.

"Indubitable proofs of hermaphrodism are at hand from the animal kingdom, but they prove nothing in man. In animals we find many phenomena which are wanting in man." (Ahlfeld: Die Missbildungen des Menschen, p. 245)

Fig. 135—Anencephalus. (Photo by Madge Walsh)

In the literature which Ahlfeld reviews three reports are noteworthy.

1. Maria Dorothy Dürrge, later called Karl, was born in Potsdam or Berlin, in 1780. The biologist Stark examined Dürrge in the aforesaid individual's 23rd year. He found totally masculine characteristics. The voice was tenor; he had a beard and masculine breast. The penis in its flaccid state was about 2½ in.: erection was normal. There was a genital cleft, in which the urethra emptied. He was hypospadiac. The testicles were in the abdomen. The perineum was two inches long. There were physiologic seminal emissions and normal sex affinity.

Dürrge died in Bonn at the age of 55. He was dissected by Mayer. There was found a short urogenital canal with a septum separating it from

the urethra. The vagina terminated at the prostatic urethra: its termination was blind. Above the point was a mass of flesh diagnosed as an undeveloped uterus: it had no cavity. The Fallopian tubes were found, and at the end of the right tube, a testicle and rudimentary sperm-ducts. On the left side was a body which resembled an ovary, but which was completely overlaid by the peritoneum.

Fig. 136—Craniorachischisis—monster-fetus with congenital fissure of the skull and spinal column, front view. (Photo by Madge Walsh)

Banon (Dublin Journal, Vol. XIV, 1852) reports the following:

Anna, after a year called Andrew, presented masculine characteristics. The normally sized penis was imperforate. The corpora cavernosa were normal. There were no prostate, seminal vessels, nor Cowper's glands. Both labia majora and minora were present. There were a genital cleft, a hymen and vagina. A small uterus was in communication with the vagina. The uterus was furnished with only the left oviduct terminating in the fimbriae tubae and near them the ovary. On the right side in the ovarian field was found a testicle with its adnexa and a well-developed vas deferens. There were no spermatozoa. The aforesaid oviduct bent around behind the uterus so that the fimbriated ampulla and the ovary lay close to the testicle. The microscopic examination of the ovary revealed no Graafian follicles.

Gruber (1859) and Heppner (1870) report a case of a pseudohermaphrodite who died at the age of 22 years. The penis was imperforate. A genital cleft was present. The prostate gland was well developed. A septum divided the vagina from the urethra. The vagina was 3.15 in. long. This was the length also of the imperfectly developed uterus. The left oviduct was normal, leading to a carcinomatous ovary. On the right side was a small testicle with adnexa and vas deferens. The course of the vas deferens was not traced.

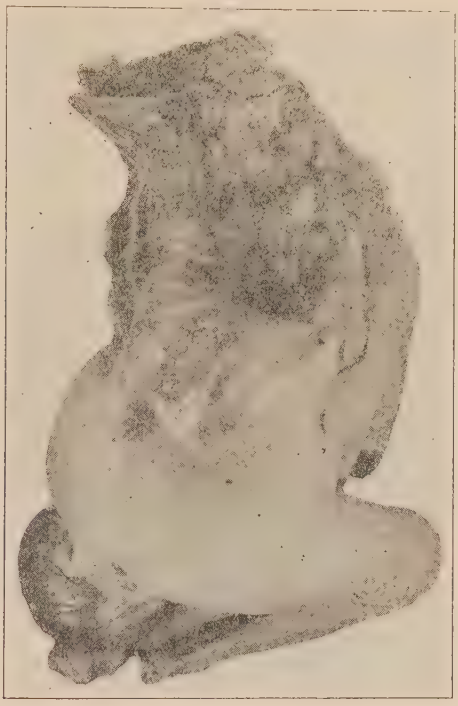

Fig. 137—Back view of Fig. 136—Showing the fissure in the back and protrusion of the brain. (Photo by Madge Walsh)

Heppner (Reichert's Archiv. 1870) reports another case of a two-months-old child whose exterior genitals were fully masculine. The penis was imperforate. There was a vagina, which communicated with the urethra. The prostate gland surrounded both the vagina and urethra. The vagina was less than an inch in length. The uterus was infantile. Permeable oviducts were well developed on both sides. On each side were an ovary and a testicle: the parovarium lay between them.

Heppner declares that microscopy certifies the existence of two ovaries and two testicles.

Prof. Slavjansky is not persuaded that the second gland be a testicle.

It remains true therefore that thus far no real hermaphrodism is found in man. It is also worthy of note that the double monsters are

always of the same sex. Nature never compels a relationship incompatible with decency and chastity.

A rare form of feminine pseudohermaphrodism is the hypertrophy of the clitoris.

Hofmann (1877) reports Georg Tomasico, 38 years of age, scantily bearded, furnished with a clitoris 2 in. long, 1 in. thick, provided with prepuce. He had also an imperforate penis. Underneath the penis was

Fig. 138—Side view of Fig. 136—showing the hernia of the umbilical cord and a cyst. (Photo by Madge Walsh)

the urethra, and underneath that a vagina nearly 3 in. in length. Womb and fimbriated oviducts were found. The ovaries were atrophied. There was neither menstruation nor seminal emission.

Schauta (1877) reports of Anna Umlauf, 39 years of age. She had a clitoris two inches in length, provided with gland and prepuce. At the orificium one passage served as urethra and vagina. At a point 1½ inch from the entrance the common urogenital canal bifurcated: one branch reached the bladder; the other reached the uterus. The labia majora were well developed. Klebs recognized two inner folds as anomalous labia minora. Menstruation was declared to be regular.

Bainbridge (1860) assisted in her first confinement a woman who had a clitoris five inches long; two inches thick. It was erectile.

The Siamese twins, Chang and Eng, were born in Siam, May, 1811. Their stirps was Chinese. Eng was frail; Chang was robust. When forty-five years of age they married two sisters, English women. Domestic infelicity was inevitable. The women took up separate abodes, and the twins alternated in their visits to their wives. They were converted to the Baptist faith.

They settled in North Carolina, devoting themselves to farming. They assumed the name of Bunker.

During the war of the Secession they lost their land, but through the public exhibitions of themselves in Europe and America, they amassed another generous competence.

Fig. 139—Brachytrachelous—monster-fetus of about 3 months with no neck. (Photo by Madge Walsh)

Chang became quite intemperate in his use of spirituous liquors.

Chang begot ten children; Eng begot twelve. With the exception of a son and daughter of Chang, who were mutes, the children were normal.

Chang died of pneumonia in 1874; Eng died two hours later.

Their union was affected by a cartilaginous band between 3 and 4 inches in length extending from sternum to sternum at the sterno-xiphoid angle. There was a hepatic connection through this band and some interlacing diaphragmatic fibers therein. The peritoneal cavities were independent as also the intestines. A slight vascular intercommunication of the livers was found to exist.

A partial dissection was performed in their home: it was completed in the College of Physicians in Philadelphia.

Dr. Alex. Scott of Glasgow, Scotland, in 1888 delivered a double monster much resembling the Siamese twins. The bodies were united throughout the whole length and breadth of the sternum down to within an inch of the umbilicus. They were males, fully developed full time infants. They faced each other at a distance of about two inches, and evidently were two distinct persons. They died in delivery.

Fig. 140—Blind Brachytrachelous with general malformations.
(Photo by Madge Walsh)

Lazarus Johannes Baptista Colloredo is described by Bartholinus (Hist. Anat. Rariorum, 1654-61, LVIII). Colloredo was born in Genoa in 1617: he exhibited himself throughout Europe. From his epigastrium hung an imperfectly developed human form that had one thigh, two hands and arms, a well formed but small body, normal head, which hung half way down Colloredo's thighs. The hands were badly formed: the genitals were imperfect. The eyes of the parasite were closed, its mouth was open, but no food was ever ingested. Movements of respiration were observed.

Colloredo grew to maturity. According to a report issued in 1642 he was married and the father of several normal children.

This form of parasite is called thoracopagus.

Many other instances of parasitic forms and members have been recorded.

Laloo of Oudh, India, at the time of examination was nineteen years of age. To the lower right side of the sternum by a bony pedicle was attached an incomplete parasite. The anus of the parasite was imperforate; there was a penis but no testicles; urine passed through the parasite's urethra: the parasite had no female characteristics. Perspiration and ele-

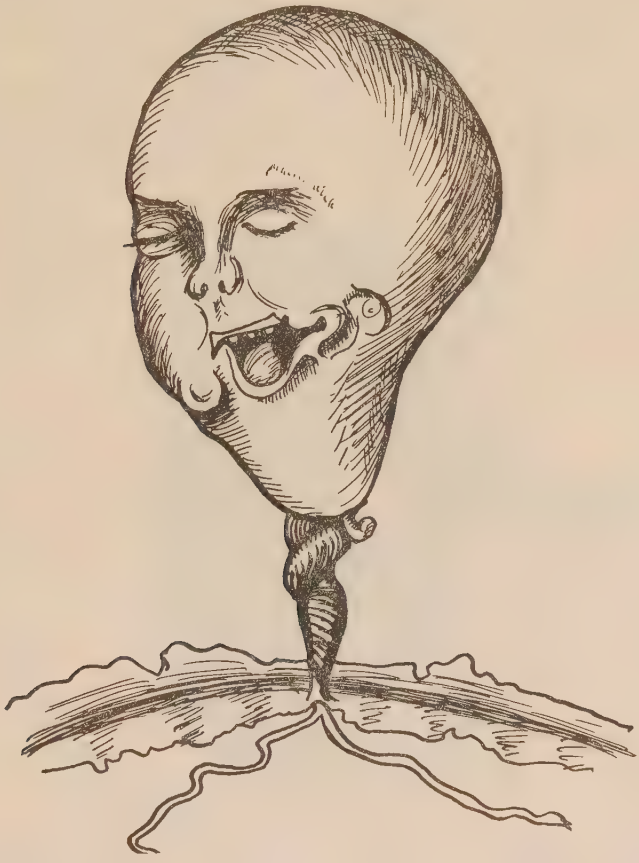

Fig. 141—Acardiacus Acormus. (Ahlfeld)

vation of temperature occurred simultaneously in Laloo and his parasite. There was no individual distinct sensation in the parasite.

Duplication of the lower extremities has been recorded.

Louise L., "La Dame a quattre jambes", born in 1869, had attached to her pelvis another rudimentary pelvis and two atrophied legs of a parasite. The attachment almost obliterated the vulva and displaced the perineum backward. She was married and bore normal children.

Wells, in the American Journal of Obstetrics, 1888, 1266, describes Mrs. B., who, in 1888, was alive and well. At the third lumbar vertebra the spinal column was bifurcated: below this line everything was double.

There were two vaginae, two ani, four legs. The outside legs were perfectly developed: the 2 inner legs were shorter and slenderer, though furnished with perfect joints. Menstruation was simultaneous, but micturition and defecation occurred at different times. The woman was married and became pregnant: therapeutic abortion was induced in the fourth month. Coitus was possible in both vaginae. She was one individual with accessory members.

The famous case of Mordake, who had a girl's face on the back of his head, "which never sleeps but talks to me forever of such things as they speak of in hell" must be set down as a gruesome myth.

Parasitic members are not uncommon: they have theologic interest only when the parasite may have a probable distinct individuality.

Fig. 142—Acephalus acardiacus dibrachius amorphus—a monster-fetus in which the head, heart, and arms are undeveloped. There is no full development of any member. (Photo by Madge Walsh)

The most celebrated of all diphallic monsters was Jean Baptista dos Santos, described by Acton. Santos was born at Havana, Cuba, in 1843. The last report of which I have knowledge is that of Fisher (Transactions of the Medical Society of the State of New York, 1866, 773), who wrote of Santos at the age of 22. Santos had two distinct penes of ordinary size. All the penile functions proceeded simultaneously. He had two scrotums, each containing one testicle. Behind and between his legs was a small member composed of two legs fused throughout the entire length. It had one patella and a movable knee-joint. It had sensibility but no power of

motion. The supernumerary leg occupied the entire perineum. His physical and mental developments were good.

Diphallus or duplication of the penis is very rare: only twenty authentic cases were found by the exhaustive researches of Ballantyne and Skirving. Usually diphallus is accompanied by other malformations of the genito-urinary organs.

Fig. 143—Acardiacus amorphus. The human features are scarcely cognizable. (Ahlfeld)

In the Transactions of the Obstetrical Society of London, Vol. XX, 120, McCallum reports an observation of a double monster at Montreal, Canada, in 1788. From the lower part of the thorax to the apex of the head two individual female forms were formed. From the lower point of the thorax downward was a single trunk with a single anus and the single genital organs of a female. The bodies at the aforesaid point of fusion formed a right angle with the single trunk. They were two individuals. They were named Maria and Rosa Drouin. The pulsations, respiratory movements, sensations of hunger and thirst were not synchronous. One child slept while the other was awake. The monster died in infancy.

In the Philosophical Transactions of the Royal Society of London, 1790, 296, Home reports a peculiar head fusion of a child born in Bengal in 1783. The child had a normal head of usual volume but vertically fused was another head. Each had its own brain, and each an individual sensibility. The midwife in horror threw it into the fire, it was rescued badly burned. The supernumerary head was furnished with the stub of a neck. It died at the age of four: its skull is preserved in the Royal College of Surgeons in London. The probability here is that there were two individuals: baptism *sub conditione* should be given the supernumerary head.

Fig. 144—Acardiacus acephalus. (Ahlfeld)

Ahlfeld adds the following data of Home's case. The death of the monster was caused by the bite of a venomous serpent. The face of the monster was orientated over the right ear of the autosite. The dissection showed that the brain of the parasite was divided from the brain of the autosite by the dura mater.

Ahlfeld declares that the evidence seems to warrant the conclusion that the parasite possessed no separate human individuality.

Another rare form of teratism is *pygopagus*.

A very famous case of pygopagus (twin monster joined at buttocks) are the Hungarian sisters, Judith and Helen. They were born in Szony, Hungary, on Oct. 26, 1701.

Fig. 145—Acardiacus acephalus. (Ahldfeld)

These sisters have been confounded with another celebrated case of pygopagous twins, called the Blazek Twins, of whom a report shall follow. The same plate is used by some authors to illustrate both terata.

In the birth of the Hungarian sisters Helen preceded with head presentation. Her delivery proceeded normally as far as the umbilicus. Then, after an interval of three hours, her breech and legs descended. Judith followed by feet presentation.

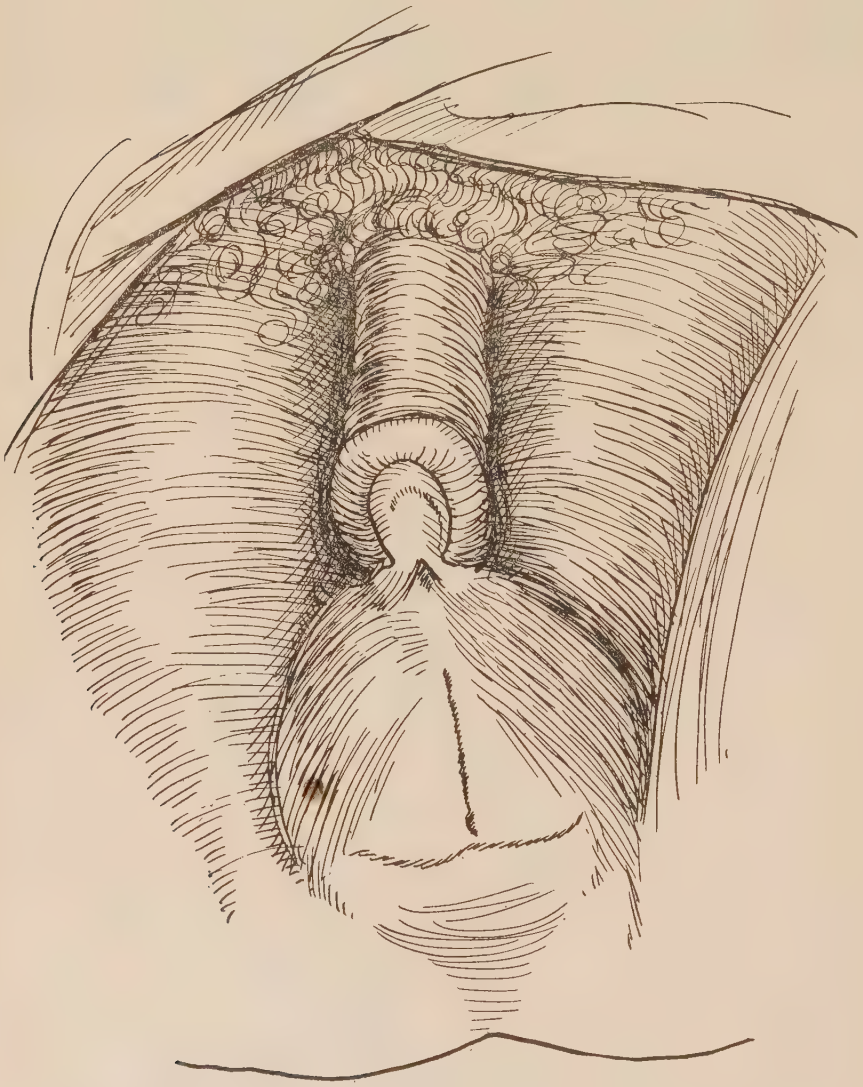

Fig. 146—Hypertrophied Clitoris. (Ahlfeld)

They were united at the lower part of the loins and at the second sacral vertebrae. The post mortem examination revealed that the aorta and cava were united above the origin of the iliac arteries: they could not be severed alive.

The single anus was between the right thigh of Helen and Judith's left thigh.

Their viscera were all double. There were two vaginae but they opened at a common point into one vulva. The two recta opened in simi-

Fig. 147—Hypertrophied Clitoris. (Ahlfeld)

lar manner into one anus. Their faces and bodies were placed half sideways in regard to each other. They began to menstruate at the age of sixteen, but their menstrual periods were not synchronous. Defecation was simultaneous, but micturition was not. Each twin had a proper clitoris, labia, and urethra, but there was a common vulva.

Judith was physically the weaker one: she was somewhat sour in disposition. She suffered hemiplegia at the age of six.

The Archbishop of Strigonia had them placed in a convent at Pressburg, where they died at the age of 22. They were of normal mentality; spoke Hungarian, French and German.

They were exhibited in most of the countries of Europe.

In 1724, Judith fell ill of fever and died: three minutes later Helen died.

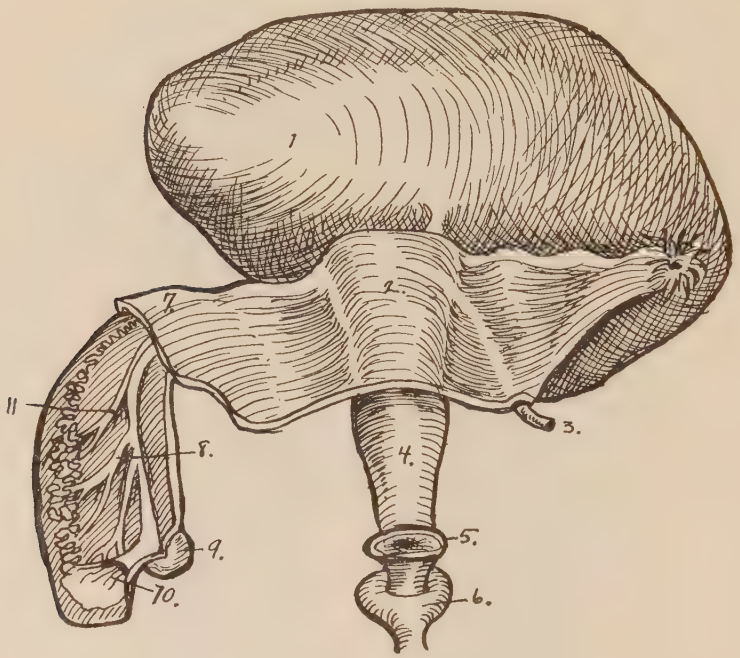

Fig. 148—Gruber and Heppner's case of Hermaphrodism.

1. Carcinomatous ovary.
2. Uterus.
3. Ureter.
4. Vagina.
5. Bladder.
6. Prostate gland.
7. Broad ligament.
8. Spermatic cord.
9. Testis.
10. Epididymis.
11. Vas deferens.

Millie and Christine were pygopagae born on July 11, 1851, of a negress slave of the age of 32 in North Carolina. She had previously borne eight normal children. They menstruated at 13: all the calls of nature in them were simultaneous. The union was at the sacra: it is uncertain whether the union were cartilaginous or osseous. They were exhibited in Paris in 1873: the record of their death is wanting.

The union of the two bodies left the twins the power to kiss each other. There was one anus, one urethra, but two vaginae. They were

very intelligent. The scantiness of the data touching them is due to their reserve which would not permit an examination of their genital organs.

Rosa and Josepha Blazek were born in Bohemia, on Jan. 20, 1878. They were united by a broad bony union in the lower lumbar region: the pelves were completely fused. There was one common urethral aperture and one anal aperture. There was a double vaginal aperture with well established septum. Where the pelves joined the sensation was common.

Fig. 149—Thoracopagus—twin monster fused at the thorax.
(Photo by Madge Walsh)

They were exhibited in Paris in 1891.

Rosa was the stronger. They had independent minds: separate thoughts. Thirst and hunger were not simultaneous. Their appetites were different.

Their parents were perfectly normal, as was their brother. They were discovered at the age of 19 by a theatrical manager who put them on exhibition. They came to this country to live in 1920 and died in a Chicago hospital in 1922. Rosa had married and had one normal son, Franz, who was 11 years old when the twins died, both victims of yellow jaundice and complications. Their case was unique in medical annals and they were well known in theatrical and circus circles, where they are said

Fig. 150.—Colloredo. (Ahlfeld)

to have amassed a fortune of more than $200,000. They were 43 years old at the time of their death.

Fig. 151—Louise L. (Ahlfeld)

It is rare indeed when an operation to separate the pygopagi is undertaken and still more rare when such an operation is successful. However, there are records of successful operations in such cases. Notable among these is the case of the Hindu twins, Rodica and Doodica, who were severed from each other in Paris in 1902 and lived for some years

afterwards. Another noteworthy case is that of Madeleine and Suzanne, the French Siamese twins. Madeleine was sickly but Suzanne enjoyed good health. After the former had convulsions the doctors decided to operate in an effort to save Suzanne. Madeleine died but her sister became well and strong and lived for many years.

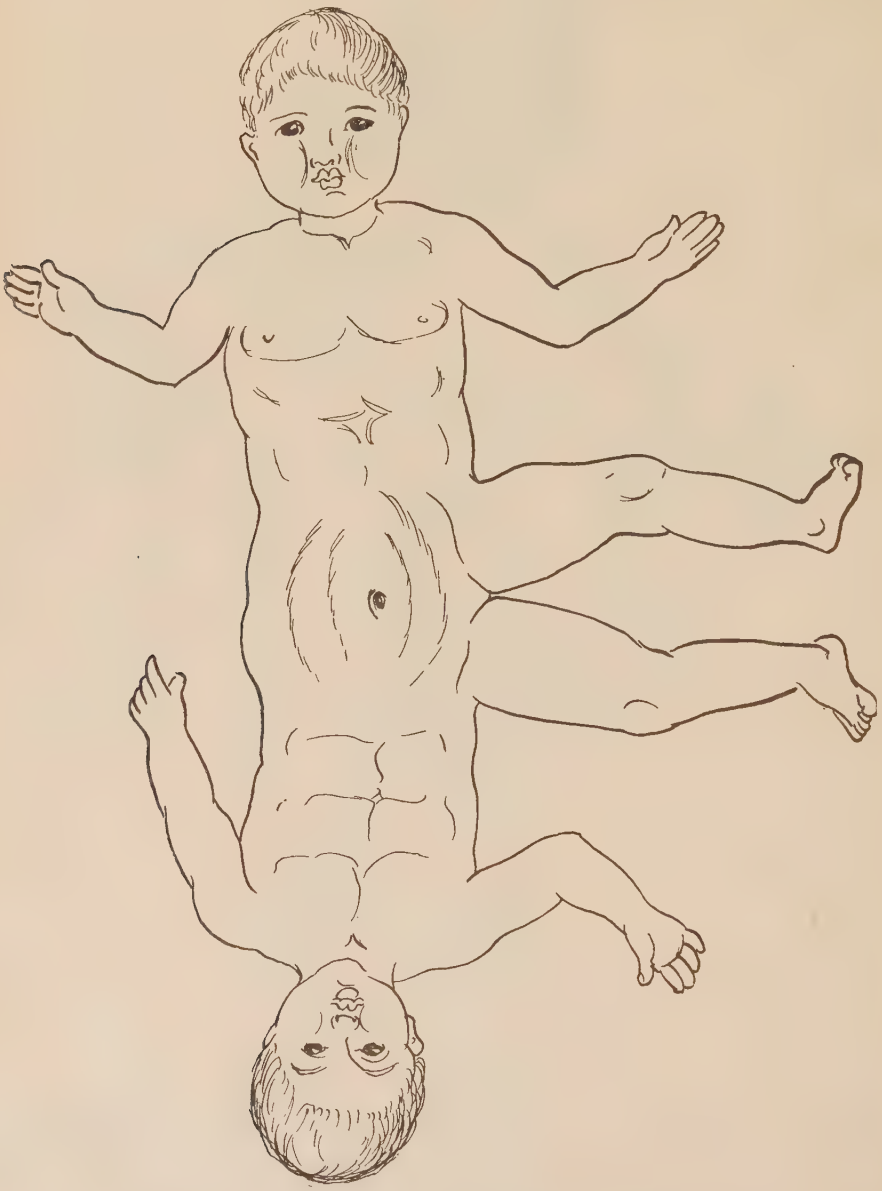

Fig. 152—Maria and Rosa Drouin. (Ahlfeld)

Recently the 14-year-old Massachusetts Siamese twins, Margaret and Mary Gibbs, had their close call. Both the girls had influenza. Margaret soon recovered but Mary lingered at death's door for days. There was talk of an operation to sever the two, but physicians and surgeons confessed their inability to cut the bond without fatal results. And so, if Mary had died, her sister's death would have been inevitable. The Gibbs

Fig. 153—The Hungarian Twins. (Ahlfeld)

twins are perfectly normal except that their bodies are joined at the hips.

Today the oldest known Siamese twins in existence as well as the most famous are the Hilton girls—Daisy and Viola Hilton, aged 18, attractive and popular. Their bodies are joined at the base of the spine, just like the Blazek sisters. Save for this handicap they are just like two ordinary girls, and enjoy most of the pleasures of life that the normal girl of 18 enjoys. They were born at San Antonio, Tex., and have been edu-

cated by private tutors. Their parents refused to send them to public school because of the comment their joined condition might have called forth. They are very accomplished young ladies and are now engaged in theatrical work.

Fig. 154—The Blazek Twins.

The legal status of Siamese twins has always been more or less a puzzle. The question is "Are they one or two persons?" In some cases

Fig. 155—Jones Twins. (Schematic)

courts have held them to be two distinct individuals, while others ruled them to be one. Probably the most novel case of this kind ever to come before a court was that of the famous Blazek sisters. The question: "Should Franz, the son of Rosa, also share in her sister's estate?" arose due to the fact that they did not leave a will. Some authorities claimed that as the sisters were united both were necessarily the boy's mother. Others argued that they were separate individuals and that Josefa was only the lad's aunt. Even medical circles were more or less divided as to whether they were one and the same person or whether they constituted separate individuals. And so it is in most cases where Siamese twins are concerned. The Hilton sisters were recently refused the right to vote because they were held to be two persons and the law says only one person can enter the voting booth at a time. One of the girls could not enter the booth without the other, so they could not vote.

Pillai, in Indian Med. Rec. of Calcutta, (1900, XVII, 98), reports a normal full term infant and a twin monstrosity at one birth.

In the British Med. Journal (1889, Vol. II) Dr. Shapter Robinson reports a case of a sternopagus; each child being a completely developed male. Three of the feet were deformed. The placenta was single, but large. The placental circulation was carried on through a single cord to both children. Within about four inches of the double monster it bifurcated to supply both individuals. It is regrettable that Robinson disemboweled the monster to deliver it. Such procedure is unethical.

Tynherz of New York (May 27, 1895) records the birth of female twins united below the 3rd sacral vertebrae. They had two vaginae, two urethrae, two labia majora, but four labia minora, one anus, double rectum; they micturated independently: one slept while the other was awake. They did not reach maturity.

There are several cases of double monstrosities in which the two beings are fused in a common longitudinal axis. One of the most celebrated is described by Huff (Am. Journal of Obstetrics, Vol. XXII, 923). This monstrosity is known as the "Jones Twins." They were born in Indiana June 24, 1889: one died on Feb. 19, 1891, the other on Feb. 20, 1891, at St. John's Hotel, Buffalo, N. Y.

They were born after two hours' labor before the arrival of the physician. The parents were normal: the mother was 19 years of age, and had a normal child of two years living at the time of the birth of the monstrosity. The weight of the monstrosity was twelve pounds; length 22 inches. The spinal columns were in apposition at the lower extremity. The bodies down to the line of union were normal. Four legs were disposed, two on each side.

There was a common umbilicus but two sets of female genitals arranged side by side at the point of fusion. There was one anus. The common pelvis was large, to accommodate the two sets of genitals laterally juxtaposed. The axis of the point of fusion bisected the two sets of genitals.

Some ischiopagi present still greater anomalies. There is no case recorded in which such a monster lived for any considerable interval.

Otto of Breslau (1841) describes a craniopagus born in the fifth month, in which a union was so effected in the vertexes that both bodies lay in a straight line. It presented the appearance of one foetal body standing on its vertex on the vertex of the other. The gender of both was feminine: the faces were turned in the same direction. The blood vessels of the two heads were in communication. The cranial cavities opened into

Fig. 156—Ritta-Christina. (Schematic) (G. Saint-Hilaire)

each other: the brains were separated by the pia mater and the arachnoid. The remaining organs of each body were normal. There were two umbilical cords.

On March 23, 1829, at Sassari, in Sardinia, was born a Xiphopagus which was christened Ritta-Christina. Unconditional baptism was administered to both Ritta and Christina. The parents being very poor brought

the monster to Paris with the intention to obtain money by public exhibition thereof. The civic authorities refused permission and through cold and want the monster died at the age of eight months. It was dissected by the noted anatomist, M. Serres.

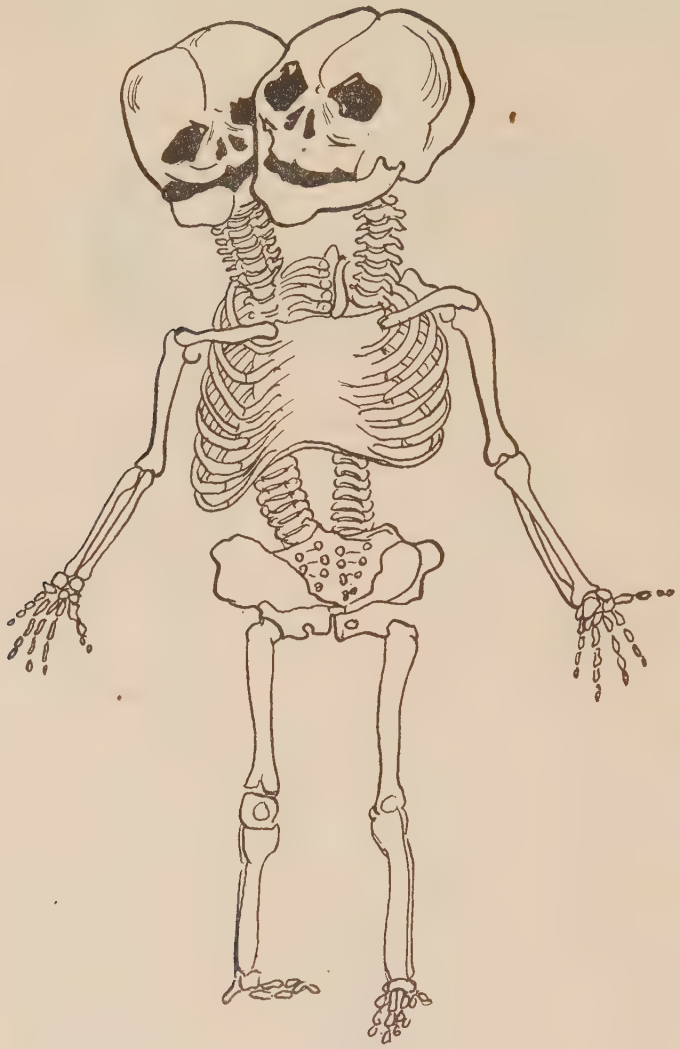

Fig. 157—Skeleton of Ritta-Christina. (Ahlfeld)

During life the temperaments of the twins were different and their sensations distinct. Ritta was the weaker. She died first. Christina was not sick during Ritta's three days' illness, but Christina's followed immediately upon Ritta's death. The autopsy showed that there were two normal heads, two necks, two pair of arms. Two spinal columns which converged and entered a common pelvis. There was one sternum with elongated ribs. There was a single pair of legs. There were two hearts

covered by one pericardium. The digestive organs were double and separate as far as the lower third of the ileum.

The cecum was single, and was on the left side: the lower bowel was single. The livers were fused: the uterus was double.

The Tocci brothers Giovanna-Battista and Giacomo, born in 1877, in the province of Turin, Italy, had each a well-formed head, perfect arms, and a perfect thorax to the sixth rib. They had a common abdomen, a single anus, two legs, two sacra, two vertebral columns, one penis. Each individual had power over only the corresponding leg on his side: walking was therefore impossible. All their sensations and emotions were distinctly independent and individual.

There are many instances of bicephalic monsters.

In some cases the heads are well differentiated; more commonly a fusion of two heads appears on one trunk.

The graver type of monsters are rare. Single monsters are more numerous than double monsters. The farther the type recedes from normal the rarer it is. The principles governing the inviolability of foetal life are applicable to monsters. Parasites of whose human personality there is no good warrant may be sacrificed to saved the mother's life. Her certain right to life prevails over the uncertain right of a mass which highest authorities declare to be a tumour.

In December of the year 1927 there was born to Mr. and Mrs. Ray Cullen at Chicago, Ills., a deformed baby. The deformity of the child's brain made it certain that the child would be an idiot. By and with the consent of the parents, Dr. Martin Schupman, the accoucheur, allowed the baby to die through loss of food. Born without the brain portion above the eyes, the child, according to Dr. Martin Schupman, was foredoomed to an existence of misery and suffering, incapable of thought, speech or action.

One may not ethically thus allow any human being to die. The right to dispose of human life is exclusively of God, and of nature under God. The executioner of a capital sentence is delegate of God. By the fact that Schupman was the accoucheur he was bound to minister the ordinary means of life to the child. He is not bound to perform a major surgical operation. That is an extraordinary means, to which no one is bound, but to deny food to the babe is to remove from it the ordinary means of life. It is the same as though he shut off its supply of air. The physical or mental deformity enters not into the reckoning. It has not been committed to us to evaluate human life. If a man may destroy the life of a new-born idiot in that way, then he, the state, any one, may destroy any idiot, all idiots. Is not this a monstrous consequence of our materialistic civilization?

A worse case is recorded in the same year. A physician refused to administer an antidote to a man who had swallowed deadly poison. The physician's plea was that the man was a hopeless sufferer.

This mode of argument would justify suicide,—even murder. When a physician is called, he assumes the responsibility of a human life. He is the doctor in the case, and he must preserve life irrespectively of its value, woes, sorrows, and sufferings.

In September, 1926, at Baltimore, Md., prominent foreign pathologists in attendance on a cancer clinic declared thus:

Dr. Archibald Leitch, director of the cancer hospital research institute of London, said:

"It is the function of all medical men to prolong life, no matter at what cost—not to shorten it. We have no right to usurp the prerogative of God or of nature—call this higher power what you will—whether the person be a cripple or a criminal, in or out of jail.

"Who can say what will be the future of the one whom we may view early in life as a cripple? There have been many instances where cripples have grown to be men of alert intellect who have given to the world untold benefits.

Fig. 158—Kraniopagus. (Ahlfeld)

"I hope the day will never come when a physician will be ordered by law to shorten life."

Dr. Joseph Colt Bloodgood, Baltimore, a member of Johns Hopkins faculty, said:

"Who is to define 'hopelessly crippled' in the sense that would legalize murder? Let us meet the responsibility we now have and not take on new ones."

Dr. William Devries, Holland, said:

"I do not think you will find a physician worthy of the name who would consent to legalize the death of any person, no matter how crippled that person might be."

Prof. J. Maisin, of the University of Louvain, Belgium, said:

"There have been many cripples who, through their great minds, have done much for the human race and betterment of world conditions."

Prof. H. T. Deelman, University of Groningen, the Netherlands, opposed any such plan.

"I have watched with interest the way Denmark handles this situation," he said. "The state grants life and protection to these unfortunates, but prevents propagation of their kind by segregating them on a separate island. I believe such a system is the solution to the problem."

Fig. 159—Dicephalus. (Ahlfeld)

MARRIAGE

The normal sex instinct in man is adapted by nature to fit him for his place in nature as the "head of the wife:"

"For the husband is the head of the wife." (Ephes. V, 23)

The male sex instinct delights in domination, even by a certain force; which within certain proper limits is not cruel, but evokes in the female that delightful correlated instinct of being abandoned to her lover, and being won by his strength, in being dominated by him.

We observe in the mating of animals that the female desires to be won. She flees from the male to excite him to greater desire. She wishes him to follow. Though she is moved by intense sexual heat, she offers opposition to the approach of the male. Her subjugation is a part of nature's plan. Undoubtedly this prelude is an aid to procreation.

"In the sexually mature woman, the sexual impulse always exists, though its strength varies in accordance with individual inheritance, with physical and mental condition, and with external circumstances, though its manifestations may be repressed by force of will.

"According to the general opinion, the sexual impulse is not so strongly developed in women as it is in men. Hegar, Litzmann, Lombroso, P. Müller, and many others, assume that the sexual sensibility of women is less than that of men; Fürbringer is inclined to attribute the characteristic of sexual frigidity to the great majority of German wives. I do not believe that this view, of the slight intensity of the sexual impulse in women in general, is well grounded, and can admit only this much, that in adolescent girls who are inexperienced in sexual matters, the sexual impulse is less powerful than in youths of the same age who have undergone sexual enlightenment. From the moment when the woman has also been fully enlightened as to sexual affairs, and has actually experienced sexual excitement, her impulse toward intimate physical contact and toward copulation is just as powerful as that of men. According, however, to the dominant artificial conditions, man assumes it as his right to give free rein to his sexual desires and to gratify them without regard to consequences, whereas woman, narrowly confined within the boundaries imposed by law and convention, cannot so readily yield to her inclination in the direction of physical love, and must forcibly control that inclination. Moreover, a powerful check on the free indulgence of the sexual impulse is imposed on woman by the consequences of such indulgence, consequences which exist for woman only.

"I may further indicate as differential characteristics, that in woman the sexual impulse is more accessible to voluntary control than it is in man, the ardor of female sexual passion is more readily diminished than

that of the male; and again that in the female the gratification of the sexual impulse is less narrowly restricted than in the male. Excessive sexual gratification on the one hand and suppression of sexual desire on the other are, generally speaking, less harmful to the female organism than to the male. In these differentiae is to be found, in my opinion, the influence which determines the type of sexuality in the respective sexes.

"Hegar maintains that under the term *sexual impulse* two distinct conceptions are confounded: First, the impulse toward copulation, the desire of carnal union with a member of the opposite sex; secondly, the impulse toward reproduction, the desire for children. At the same time, this author admits that it is questionable if we can properly speak of an impulse toward reproduction, when reproduction is merely a consequence of copulation; in the case of civilized man, at any rate, so much reflection is connected with the idea of reproduction that it can hardly be proper to speak of anything of the nature of an impulse. In the case of woman, the expression is less unsuitable, since in woman special organs exist for the maintenance of the ovum after fertilization, and these organs may perhaps lead to the production of this peculiar form of mental activity.

"According to Darwin, a comparatively less intensity of sexual desire is common to the females of all species of the animal kingdom. The female demands a prolonged courtship, and often endeavors for a considerable time to elude the male. In the lower classes of the animal kingdom the female leads a separate existence as soon as she has been fertilized by the male, the sexual functions being thus subordinated to the maternal. Among birds at the pairing season the male is always more passionate and active of the two, whilst the female commonly remains passive and occupies herself in building the nest. Among mammals, it is difficult to determine whether sexual feeling is stronger in the female than in the male; but it is certain that sexual relations are seldom long lasting, they continue in most cases only during the period of heat or rut, and at most only till the birth of the young.

"From these numerous phenomena witnessed in the animal kingdom, many naturalists have concluded that in females of the human species also, sexual sensibility and the intensity of the sexual impulse are less than in the males, and even that the sexual sense in general is but little developed in the female sex, or sometimes entirely wanting. The complicated apparatus which the primary and secondary sexual characters of the female combine to make up, exists, according to this view, not for the gratification of the sexual impulse, but for the fulfilment of the function of motherhood. 'Love in women,' says Lombroso, 'is in its fundamental nature no more than a secondary character of motherhood, and all the feelings of affection that bind woman to man arise, not from sexual impulses, but from the instincts, acquired by adaptation, of subordination and self-surrender.'

"Mantegazza lays stress on the fact that in the female, sexual desire is very rarely accompanied by pains analogous to those which occur in man, in whom sexual excitement manifests itself in painful tension of the testicle and the seminal vesicles, or in spasmodic, long-continued priapism.

"Sergi writes to Lombroso: 'The normal woman loves to be flattered and wooed by man, but yields herself to his sexual desires only like an animal at the sacrifice. It is well known how much pains must be taken, how many caresses must be expended, before a woman will yield with pleasure to a man's desires, and will share his sexual passion. Without the employment of these means, a woman remains cold and gives as little satisfaction as she feels. There are girls who are quite obtuse to the joys of love, and either resist energetically a man's approaches, or yield to him passively, without ardor and without enthusiasm. It is well known, also, that among the lower races of mankind, means are employed to stimulate the sexual sensibility in women, means that seem to us to amount to torture; and that the male, with the same end in view, undergoes the most painful operations, from which it is apparent that the slight sexual sensibility of women in these lower grades of civilization is fully recognized.' And again: 'If a normal woman marries for love, she hides that love deep in her heart, and even on the wedding-day exhibits no great sexual excitement; she often complains later that in her husband the love-fervor of the first days still continues; the very moderate sexual needs of the wife form a natural and most valuable check to the much more powerful passion of the male.'

"Saint Prospere expresses himself to a similar effect: 'Women do not fall in consequence of the excessive power of the senses—in this domain they are overlords, in striking contrast to men, whose weakest side is here. It is not by means of the senses that a woman is to be overcome; her weakness lies elsewhere—in her heart, in her vanity.' And de Lambert wrote the epigram, 'Women play with love, and yield themselves to love.'

"Well known also is the saying of Dante:

" 'We know how speedily in women the fire of love is consumed
" 'Unless eye and hand continually supply it with fresh fuel.'

"On the other hand, it is asserted in the laws of the Hindus that sexual desire in women can as little be satisfied or fed full as a devouring fire can be fed full of combustible materials, or as the ocean can be overfilled by the rivers that pour their waters into it.

"As a rule, remarks Erb, it is believed that the sexual impulse is less intense in women than in men. This is true enough, he writes, as regards youthful and virgin individuals, who have not yet come into intimate contact with men, and in whom sexual desire and sensibility have not yet been directly excited; later, however, when sexual intercourse has been begun, a change usually takes place, and the sexual needs become active in women also, and demand satisfaction. It is well known that not a few women experience powerful and uncontrolled sensual inclinations, just like those of men. On the other hand, we must insist that quite a large number of women possess the so-called *naturae frigidae*, and have no sensual inclination to sexual intercourse, to which they are either indifferent, or in some cases strongly averse, even regarding it with horror. This lack of the sexual sense in women is especially common in hysterical subjects, and Erb reports that he has encountered quite a large number of cases of this character. Whether in quite healthy women with normal sexual im-

pulse, complete abstinence from sexual intercourse, too often compulsory but sometimes voluntarily undertaken, is harmful in its consequences—this, says Erb, is a question very difficult to answer. Many such unfortunate women have assured him that they suffer severely in consequence of their enforced continence; the majority of these became neurasthenic or hysterical. The complication of purely physical influences with mental influences, increases the difficulty of the problem. Neurologists have observed women on whom continence was forced either during marriage or after its dissolution, who thereupon fell into a state of severe nervous exhaustion or nervous excitement, or suffered from threatening or even actually developed psychoses. That sexual abstinence is 'absolutely harmless,' as moralists and many physicians would so gladly believe, appears to Erb a quite unwarrantable assumption.

" 'In the processes of reproduction,' continues Erb in his discussion of this subject, 'woman is the principal sufferer. With inhuman cruelty, nature has condemned woman to a far more difficult role than man in the intercourse of the sexes and in the preservation of the species; she is overpowered and forced by man, she is compelled to make the most severe sacrifices for the sake of the new generation, first when it is germinating within her womb, and later when it is entrusted to her care; and only too frequently she fails to find the respect and protection due to her for the performance of these functions. Compared with the sacrifices made by woman, the temporary continence which is all that is demanded from the man will be admitted to be a small matter! It is fortunate that, as a rule, the young woman who has never come into intimate contact with the male, appears to be endowed by nature with a relatively weak sexual impulse! This unequal and unjust distribution of the male and female roles on the part of nature may be regretted, but it cannot be altered.' " (Kisch, op cit.)

I am fully persuaded that the sexual impulse of the normal virtuous woman is "the impulse toward motherhood."

In the intense sexual excitement of coitus there is always mingled a strong impulse to evacuate the sexual excretion, the semen. Inasmuch as the ejaculation of the semen is necessary for the biological end of sexual activity, this impulse is nature's guiding influence.

The caresses and kisses which in marriage are the proper preamble to coition cause hyperaemia of the woman's generative organs, and cause in consequence that sexual excitement which nature demands for the proper performance of the act. These preliminary caresses form a great part of the delight in the conjugal embrace. The moral law sets no limit to their indulgence, save only that the male semen shall not be wasted and that the woman shall not be moved to orgasm outside of coitus.

In virtue of their holy conjugal union the *conjuges* have a right in each other's bodies which makes lawful what is called by theologians the *actus imperfecti, i. e.,* the desire of coitus, amorous colloquies, embraces, kisses, views of the genitalia, etc. This right persists throughout the entire course of married life. Refinement and decency should characterize every life, but these qualities do not prevent the enjoyment of the charms

of conjugal love. The old school of theologians have been too rigorous in this matter. We are all familiar with the moralists' anathema upon *actus propter solam delectationem.*

An ethical law was set up which compelled a man who sought happiness in an act proper to his state to legitimatize his act by some ulterior motive other than the happiness. Issues were often confused here. It is lawful to place a pleasurable act in order to experience the pleasure thence arising; but it is not lawful to be so motivated that one would place the act even were it unlawful.

"Quaestio dijudicanda manet, num liceat appetere delectationem, non quidem ob aliquam ejus utilitatem aut honestatem, sed propter seipsam quatenus tamen apprehenditur ut alioquin honesta vel licita et moderata. Ad quaestionem ita positam videtur tuto affirmative responderi posse. Quia quaerere delectationem licitam, et regulatam rectae rationis judicio, est quaerere id quod a naturae auctore homini ut appetibile proponitur, ut homo hoc modo ad agendum alliciatur. Ergo cum homo delectationem moderatam et licitam appetit, facit quod Deus vult, neque male facit, neque talis actus videtur indifferens esse, sed honestus, non in summo quidem sed in infimo gradu honestatis. Utique non ipse actus elicitus delectationis ex interna sua natura est honestus, sed honestas ei accedit ex rationali voluntate imperante et dirigente, quae non permitteret delectationem nisi esset honesta." (Pesch)

In the enjoyment of these secondary joys of the married state, involuntary seminal emissions may have place. If they be not intended, and if acts which in the ordinary course of nature produce orgasm be avoided, the seminal emission which per accidens occurs should be disregarded: it is neither unhygienic nor unethical. I have known women who felt intense sexual pleasure, and a flow of mucus, when merely embraced and kissed by their husbands. Clearly the women were not to be dissuaded from receiving these embraces. They are by nature blessed.

Therefore it is lawful to enjoy the joys of marriage without any ulterior motive. The fact that the Author of nature has attached these joys to the conjugal state is sufficient authorization. The Onanist sins because he seeks the happiness of the state and positively excludes the principal end of marriage. He *acts propter solam delectationem.* He is determined to have the pleasure even though it be sinful. Thus also act the fornicator and adulterer.

Since coitus is a Christian duty worthy of the explicit attention of the great Apostle, St. Paul, the wife should find it consistent with piety to infuse into that lawful act that intense emotion and love which promote the great end of marriage. The copula in marriage should be a climax reached through acts of tenderest mutual love, and it should absorb the entire mental and bodily potentiality of the lovers. This high degree of mutual love acts favorably on procreation.

"—Why brand they us
"With base? with baseness? bastardy? base? base?
"Who in the lusty stealth of nature, take
"More composition and fierce quality

"Than doth within a dull, stale, tired bed,
"Go to the creating of a whole tribe of fops,
"Got 'tween asleep and wake?" (King Lear, Act I. 2)

With fearful brutality Edmund describes the physiological effect of the intensity of love in the fornicarious union, and also the enfeebling effect of overindulgence. The glutted sexual appetite finds little pleasure in the usual object, and therefore is apt to seek unlawful means to arouse senses cloyed with satiety.

Fearful are the effects of such a life. Cohabitation becomes distasteful; respect, admiration, love are but dust and ashes.

Consistently with the proper enjoyment of the marriage due the *conjuges* may at other times preserve a certain proper reserve, which heightens conjugal love.

"My wife kept an old fashioned precision of manner through all her admirable life—an excellent thing in woman, since it sets another value on her sweet familiarities." (Robert Louis Stevenson)

That is to say that when the chaste wife yields herself to the intense caresses of the conjugal act, it is evident that her love is giving something more precious than her life; and that she is giving it to that man alone whom the sacred marriage bond has made part of her being.

Some marriages, instead of being an ideal sacred companionship, are what Stevenson calls "a coexistence in unsociability."

Gentle pinching and biting, inflicting even some pain, would be disagreeable from another, but received from the loving husband they are powerful excitants of sexual desire. Throughout the true woman's sexual delight there is mingled a higher, more spiritual element, the maternal instinct, which craves the child which she may love and cherish. The "irresistible" wife is the woman who combines a strong healthy procreative aptitude with modesty and refinement. Without detriment to natural virtues she will often invite those caresses which are the preamble to the act of carnal union. If a less loving attitude be assumed by the wife, the man may feel embarrassed to ask his just right, fearing that he may be judged unfavorably by one in whose eyes he would always be a hero. In marriage there should be reciprocity in everything. "Let the husband render unto the wife her due; and likewise also the wife unto the husband. . . . Defraud ye not one the other, except it be by consent for a season, that ye give yourselves unto prayer, and may be together again, that Satan tempt you not because of your incontinency." (I. Cor. VII. 3, 5)

To "be together" is a euphemism for the enjoyment of the rights of marriage. Paul here exhorts both to fulfill the obligation of the marriage bond.

No one can fail to observe Madame de Stael's delicate condemnation of Lucy's coldness, "who had been taught by her mother that it was immodest to avow affection even for a husband." (Corinne) The inevitable result of that coldness and reserve, falsely called self-respect, was to separate Lucy from her husband.

Love in a woman is unlimited confidence. When the lawfulness of the coitus establishes a good conscience, the sexual act, at least in its first

stages, may be accompanied by a certain coy bashfulness, the charm of the chaste wife, giving evidence of the holiness of her love, and the greatness thereof.

Malchow quotes Ziegler that "in all animals a high degree of excitement of the nervous system is necessary to procreation, and thus we find an excited prelude to procreation widely spread."

The man has the greater sexual appetite and his love is more sensual. His love is attracted by the physical beauty of woman. His sexual activity knows no periods of apathy. He is always *ready;* his desire is aggressive; he glories in his virility. Woman's love is more psychic; she often is merely passive in the embrace of the male, and yields only as a price that she must pay to be loved. In the ideal Christian union therefore the man needs the bridle more than the spur. He needs to develop self-control that he "know how to possess himself of his own vessel in sanctification and honour, not in the passion of lust, even as the Gentiles who know not God." (I. Thess. IV. 4, 5.)

Husbands should remember that the course of nature at times renders the woman irresponsive to the higher psychic love. A certain delicacy therefore in conjugal relations, a certain connubial modesty on the part of the *conjuges* will strengthen their bond of union and ennoble the consummation of their union. On the contrary a demand of the marriage "due" when the companion is not fit to respond will provoke disgust and engender hatred. Many a woman who has been made the drudge of mere animal lust has conceived such a hatred for her husband that the coitus is never pleasant to her.

When conjugal love, the foundation of society, is degraded into mere sensuality, when woman is never loved except for the enjoyment of her body; when all the mental and ethical elements of love are absent; then "Portia is Brutus' harlot, not his wife." The great bond of marriage which incorporates and makes one the man and woman gives to them the joys of the body and the spiritual communion of souls. Coition as the physical basis of the perpetuation of the species should be sanctified by the higher principles of perfect love. If the physical act of coitus be divested of the higher love of the soul then even in marriage woman becomes a sort of prostitute. The Archangel Raphael's advice to Tobias should establish the motive and practice of marriage: "For they who in such manner receive marriage, as to shut out God from themselves, and from their mind, and to give themselves to their lust, as the horse and ass, which have not understanding, over them the devil hath power.

"But thou when thou shalt take her, go into the chamber, and for three days keep thyself continent from her, and give thyself to nothing else but prayers with her." . . . "And when the third night is passed, thou shalt take the virgin in the fear of the Lord, moved rather by love of children than by lust, that in the seed of Abraham thou mayest obtain a blessing in children."

The marriage of Tobias and Sarah is divinely beautiful. "Then Tobias exhorted the virgin, and said to her: Sarah, arise, and let us pray to God today, and tomorrow, and the next day: because for these three

nights we are joined to God, and when the third night is over, we shall be in our own wedlock.

"For we are the children of saints, and we must not be joined together like heathens that know not God.

"So they both arose, and prayed earnestly both together that health might be given them.

"And Tobias said: Lord God of our Fathers, may the heavens and the earth, and the sea, and the fountains, and the rivers, and all thy creatures that are in them bless thee.

"Thou madest Adam of the slime of the earth, and gavest him Eve for a helper.

"And now, Lord, thou knowest, that not for fleshly lust do I take my sister to wife, but only for the love of posterity, in which thy name may be blessed for ever and ever." (Tob. VIII. 4-9)

What beautiful security a wife would feel in the possession of such a man!

The noble personality of Tobias rises up to proclaim degenerates and miscreants the unprincipled unchaste lovers who by persistent entreaty and violence break down the defense of virginal chastity and dishonor and deflower the woman whom they profess to love.

Virginity feels no mental pang in yielding its place to a conjugal state in which God's law is the ruling motive. Conjugal love becomes purified and intensified by the consciousness of the moral worth of the lover, and of the blessing of God. Admiration must enter into perfect love: no woman worthy of the name will long love a sensual beast.

Full oft illicit intercourse is more prized than the lawful enjoyment because through lack of mutual cooperation the conjugal act is become a dull mechanical thing. It is an error for the wife to act on the principle that for a woman to manifest sexual emotion and desire is degrading. Her married state gives her a right and a duty. She has the right to the enjoyment of the copula; to its full unrestrained enjoyment; and she has the duty to render to her partner an equal full unrestrained enjoyment.

The more intense is her sexual energy the greater will be the happiness of her husband, and the more favorable will be the effect on reproduction, the supreme end of the copula.

Inasmuch as woman by nature is the passive agent; inasmuch as her sexual apparatus is more complex; inasmuch as in her a certain moral sensitiveness must be overcome before she passes into a state of active participation and assistance in the copula, the climax of sexual orgasm is not reached so quickly in the female as in the male. Moreover the woman usually has intense sexual feelings immediately before, during, and immediately after the menstrual period. Conception is most liable during these days, but owing to the repugnance of the menstrual discharge coition during the flow is usually intermitted.

Desire to find relief from this intense sexual emotion during this part of the month often induces women to commit masturbation. They sometimes to seek to justify the practice on the ground that their state is an abnormal one which demands relief. This is fallacious. Such relief is an

abuse of nature and is intrinsically wrong. It tends to degrade the nature of the woman, and expelling from the woman's passion its psychic maternal element, it increases the merely animal desire, and thus perpetuates itself.

Repression of sexual emotion or even failure to arouse proper sexual energy will retard woman's orgasm and result in disappointment to the male and in mental and physical anguish to the woman. Great domestic infelicity is caused by this. The incompleteness of her part in the act of coition leaves her in a highly emotional state longing for that nervous explosion which is her right, on fire with a wracking desire which inflames her whole being, tantalized, abused, mentally and physically disappointed in the very well-spring of her being. Moral theologians allow the woman in such cases to excite herself by manipulation or other apt means to complete her orgasm; but this is a poor equivalent for that supreme bliss and satisfaction that comes from a lawful lover's embrace. The healthy instinct of the woman demands that the active principle of generation should penetrate into the very center of her being and when this vital act is perfect there follows in her a nervous explosion bringing a delightful sense of blissful peace.

The reciprocal male instinct is to penetrate into the inner female organ of reproduction and to excrete the active principle there. All proclaims that the carnal union is fashioned for one great end, the reproduction of life.

Many causes conspire to retard the orgasm in woman, among which may be mentioned the following:

The unwillingness of woman to give way to sexual emotion through a false belief that it is degrading.

Disease or weakness of the sexual organs, especially after childbirth.

The unholy wish to avoid childbearing.

Dislike of the husband, which may be caused by his coarseness, lack of personal cleanliness; in a word by his lack of those qualities which appeal to the finer tastes of the woman.

If the woman receives the conjugal embrace without desire, merely to perform a distasteful marital duty, she will rarely experience the joy and relief which nature intends.

It is evident that it is an important duty of the husband to insure complete happiness to his wife in the conjugal embrace. Consequently he should be lavish of those preliminary caresses and kisses which arouse the proper sexual ardor in his consort. Women love courage and strength in a man, they love to be subjected by him in the sexual relation, but the exercise of his strength should be accompanied by tenderness.

Personal cleanliness of both husband and wife is indispensable for a perfect conjugal relation. The odor of the body freshly bathed, and especially the odor of the sexual parts is a proper incentive to sexual love, but low indeed is the type which feels no disgust at the old dead scales of the body or at the odor of the adhering particles of the faeces about the anal region. It is regrettable that it is not a convention of decency to bathe

the anal parts after every defaecation. At all events it should be a daily practice.

In general the principals in the marriage contract enter the relation unequal in sexual capacity. As a rule the woman is less informed than the man in sexual physiology: her environment and education have precluded functional activity of the generative organs. The function of menstruation has intensified the feminine instinct of privacy and defense. Her sexual powers must therefore be awakened before she can take the proper part in the great act of reproduction. In that great awakening the personality of the man is the greatest factor. In the male personality the greatest factors are virility, strength, mental power, and moral goodness. It is a feminine instinct to depend on the man, and dependence goes toward a dependable object: it is easy for a woman to love a man whom she can admire.

The boy, even the ideal boy, comes earlier to a knowledge and use of his sexual powers. Nature seems to fashion him for the aggressive principal, who shall win the female. In order to evacuate his bladder properly he must handle his generative organ. Few there are who will not yield to the temptation to extend this manipulation more than necessary. The retraction of the foreskin produces pleasurable sensations. Association with other boys develops his sexual knowledge and his sexual activity. The activities of the normal healthy boy will produce frequent erections of the penis and even the sensation of ejaculation before the semen is produced at puberty. The possession of well developed sexual power is a source of delight to the man in his own consciousness, and a source of glory to him among his companions; whereas the girl feels that sexual power and activity are degrading.

At puberty the boy, even the purest boy, will have at intervals exciting sexual dreams and emissions of semen. These perfectly healthy processes are the evidence of his virility, and should cause no regret.

Nature and environment have therefore equipped the young man at the time of marriage with fully developed and, in a certain sense, exercised sexual powers. It is incumbent on him therefore to lead gently into the new state of life the "weaker vessel", who yields up the closely guarded holy temple of virginity at the call of conjugal love.

"The conditions of women in regard to their marital relations vary with the individual, and for convenience married women have been divided into the following classes:

"First. Women so situated and constructed, both physically and mentally, that they respond to the caresses of the husband at all times.

"Second. Those who can under reasonable circumstances, by a voluntary effort, hasten or retard the climax to meet the varying conditions under which they live.

"Third. Those who are unable to properly participate, or bring into requisition any physical or mental methods to produce simultaneous orgasm, or harmonious relations, but are left excited, nervous and unsatisfied after coition.

"Fourth. Women whose sexual passion does not become aroused; who do not derive any pleasure or benefit from copulation, and who cannot conceive how the act can be pleasurable for anyone.

"This division is somewhat arbitrary, as it is possible for a woman to be put in any of these classes at different times during her marital life.

"It is also impossible to determine the proportion of women in any of these classes, but it has been estimated that the first class embraces 5 per cent.; the second, 50 per cent.; the third, 30 per cent., and the last, 15 per cent. of all married women.

"According to this estimate nearly one-half the women are living lives that can neither be healthful nor congenial, and whose homes are lacking in a fundamental requisite for happiness.

"Not only is the woman concerned, but the remainder of the family is directly involved, and when we consider the prevalence of these undesirable conditions the situation becomes appalling.

"Granting for the sake of argument, that the proportion of congenial homes is larger than that given, it is still a wonder, not that divorce is so common, but rather that it is not obtained with greater frequency.

"In order to mitigate the evil it becomes necessary to remove the cause, and fine theories, however brilliantly promulgated, are of but little avail if practical results are not forthcoming." (Malchow)

It is evident that the women of the first two classes need not be here considered. Their sexual relations may not be absolutely perfect, but absolute perfection is not to be sought on earth.

In a treatise like this the author might well leave this subject for the trained physician, were it not that these unhappy domestic relations often give rise to cases of conscience, and advice is sought of the confessor, which he should be able to give.

It seems evident that for all those enumerated in the third class a remedy may be found. We have therefore to seek the causes for the sexual inequality. We have previously stated that as a rule sexual orgasm is not reached as quickly in woman as in man. Her sexual apparatus being more complex she is capable of more diffuse and prolonged sexual sensations. An ignorant, abrupt onslaught by the husband is cruel and will cause the woman pain, disgust, and physical disorder. Neither is satisfied by such intercourse, and, unless restrained by the moral law, they will seek from unlawful sources what is denied them in lawful wedlock.

The author once was called to espouse the cause of a young girl who had been seduced by a prominent business man. The author of the bastardy openly justified himself for the reason that his own wife refused to bear children, despised and ridiculed his sexual activities, and coldly consented to his embraces but rarely, and then with pitying contempt that he should have such beastly propensities.

This is an extreme case, but evil consequences always follow uncongeniality in the marriage bed.

In the first days of marriage the man may tend to rapid and premature arrival at ejaculation. For a time therefore synchronous orgasm may be impossible. But if there be perfect trust and confidence between the

principals persistent effort will invariably bring about a mutual orgasm. When this proper relation is once attained then the memory of the exalted pleasure and the appetite naturally evoked insure success.

The sexual act on the part of the woman, especially of the refined woman, is a thing of the heart and soul: and personal attraction to her husband is necessary for her sexual gratification. If the man is impetuous, rough or too ardent, he will be gratified, but the woman will be disappointed and unsatisfied.

A wife should confide fully in her husband. She should reveal to him her feelings, and should cooperate with him to produce that state of feeling which nature has designed should accompany the act on which the production of life depends. She should keep in mind that sentence of St. Paul: "Let marriage be honored among you, and the bed undefiled: for fornicators and adulterers God will judge." (Heb. XIII. 4) It is evident that the term "bed" is here used euphemistically for the act of coition, and it is Paul's intent to emphasize the lawfulness and honor of lawful intercourse, and in the same intent to point attention to God's heavy punishment of any act that violates the sacred rights of marriage.

The consistent doctrine of St. Paul also appears in I. Cor. VII. 3:

"Let the husband render unto the wife her due; and likewise also the wife unto the husband."

As a rule, the husband being more aggressively passionate needs not this command, but many wives need to regulate their wifely duty by its spirit. The woman must first of all consider that by proper participation in the conjugal act she is not doing something unwomanly, degrading, a necessary evil. On the contrary she is fulfilling a noble, most necessary function of life. She is fulfilling a strict obligation of justice, and she is most honorably taking her just place in her husband's affections as his helpmeet for him.

This teaching does not lower the excellence of virginity and continency. Virginity is a state essentially above the married state; and St. Paul allows the married to remain continent at seasons, to devote themselves to prayer. But he allows this only by consent of both principals, and only for a limited season. Both virginity and the married state are good in their respective order and each order has its duties and rights. The great veneration paid to virginity and continency in the Church from the earliest times was apt to encroach upon the rights of marriage. This reached its climax in the principles of Tertullian. Even such doctors as Augustine and Jerome went to excess in extolling virginity and continency over wedlock. Such rigorists as Estius have striven to perpetuate the error. The source of the error seems to be that from the fact that the use of marriage is less good than virginity and continency, they have concluded that it be an evil, only to be tolerated lest worse evils should arise. The Church has saved the people from these extremes. It is her certain teaching that when the carnal union of man and woman has place in lawful marriage, in proper circumstances, in accordance with the laws of nature, and thus that reproduction of life be not by any wilful act frustrated, then it is an honorable, holy act, and the fulfillment of an obligation of justice.

In cases of sexual inequality physicians advise the husband to bestow upon his wife great tenderness that her mind may desire his embrace, and also as a preliminary to copulation to caress the great centers of sexual feeling that hyperaemia may induce that activity necessary to render the orgasm synchronous. They also counsel him, as far as the will can control his act, to delay his orgasm to correspond to the orgasm of the woman.

The physician's advice to the wife is more extended. She must in the first place be without fear. She must be persuaded of the ethical rectitude of her act and of its agreement with every canon of refinement and good breeding. She must love her husband. If for any cause she cherish an antipathy against him it will preclude all mutual cooperation. The embrace of the husband will be disgusting. The woman loves to render her services to a man who fulfills her ideal.

One of the greatest causes of infelicity is the determination to avoid childbearing. No woman can render her proper services in the conjugal act when she aims to frustrate nature, and when she is possessed by a dread that the intensity of nature may carry the act to completion against her will. The very intention of her mind to frustrate the proper purpose of nature makes her act of copulation gravely criminal. She has no longer the honor of a wife, but is a harlot, who allows her body to be abused for mere pleasure. It is evident that in such a coupling there is no synchronous orgasm, no proper satisfaction, and no depletion of the congested genitals of the woman. Through ignorance many women believe that the suppression of sexual passion will decrease the liability of pregnancy. Thus many by the power of the mind hold back their sexual impulses in coition. This belief is entirely erroneous: the only effect it has is to wreck the happiness of married life, and to load the principals with sin; for although the act be futile, its sinful motive makes it a grievous sin.

Divorce is increasing faster than marriage in the United States, according to a report issued by the Department of Commerce, which shows that marriages increased 1.2 per cent. during 1926, as compared with 1925, while divorces increased 3.1 per cent. in the same period. The marriages performed in 1926 numbered 1,020,079, an increase of 13,745 over the number for 1925; and the divorces for 1926 numbered 180,868, an increase of 5,419 over the divorces for 1925. In 1926, the first year that statistics of annulments were collected by the Census Bureau, 3,823 marriages were annulled, making a total of 184,691 broken homes. In comparing the increases in marriage and divorce with the increase in population, the Census Bureau estimates the population of the United States on July 1, 1926, the beginning of the government fiscal year, at 117,136,000, as compared with 115,378,000 on July 1, 1925. On the basis of these estimates, the number of marriages per 1,000 of population was 10.26 in 1926, as against 10.30 in 1925. On the same basis of estimating, the number of divorces granted in 1926 was 1.54 per 1,000 of population, as against 1.52 in 1925.

An interesting analysis of its statistics is furnished by the Department of Commerce:

"The rate of 10.26 marriages per 1,000 of the population for the United States as a whole represents an average of rates in the individual

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States ranging from 4.6 in Delaware and 5.8 in Wisconsin to 16.35 in Maryland and 21.6 in Florida.

"The increase of 3.1 per cent. in the number of divorces granted in the United States during the year 1926, as compared with the year 1925, is the net resultant of changes in the various States, ranging from decreases of 39.2 per cent. in the District of Columbia and 14.1 per cent. in South Dakota, to increases of 16.7 per cent. in Maryland and 25.9 per cent. in Florida.

"Other States showing considerable decreases in the number of divorces were New Hampshire, with a decrease of 7.2 per cent.; Wyoming, with a decrease of 6.3 per cent.; Nevada, with a decrease of 5.6 per cent., and Mississippi, with a decrease of 4.4 per cent. Other States showing considerable increases include California, with an increase of 13.6 per cent.; North Dakota, with an increase of 10 per cent.; Vermont, with an increase of 9.7 per cent.; New Jersey, with an increase of 8.8 per cent., and Kentucky, with an increase of 8.3 per cent.

"The rate of 1.54 divorces per 1,000 of the population, which is shown for the United States as a whole, likewise represents the combination of data which gives rates in the individual States ranging from 0.18 in the District of Columbia and 0.41 in New York to 3.52 in Oregon and 13.19 in Nevada."

Many are the causes of this degeneracy.

1. The doctrinal error touching the nature of marriage is the prime cause. The principals will not be held in a rescindable contract, when carnal love cools; when the lure of personal charm vanishes; and when a greater attraction enters the reckoning.

2. Absence of offspring is the second great factor in divorce. Men readily tire of a childless wife. Even in conjugal intercourse the consciousness that it is a barren act lowers the union to a selfish coarse animal plane. The wife who can add the august title of mother to her claim to her husband's love has a powerful coefficient. A man will tire of a childless woman quicker than of his own child.

Morality is low among the Eskimos. Where there are no children divorce is common, and an Eskimo woman may be married eight or ten times before settling down for good.

The birth of children more or less stabilizes the union. The more children are born, the more stable becomes the family.

In our civilization the no-child marriage is unstable, unless held fast by a religious belief in the indissolubility of marriage. The conception-control marriage is but little more stable. Both principals lose respect for, and tire of, their guilty partners.

"One out of every six marriages ends in the divorce courts. It is easy to demonstrate from history that the increase in divorce, the loosening of family morality, and the breakdown of the sanctity of the home have been the heralds of national decline and decay.

"The attitude of the Church of Christ toward divorce is not a matter of expediency, or of particular application to conditions as they may exist

in this or that society or community of men, but loyalty to the spirit and teaching of her divine Founder, Jesus Christ.

"When we turn to ask ourselves just what Christ teaches on marriage and divorce, as represented by His visible Church upon earth, we discover a distressing and humiliating and sometimes perplexing divergence. In general we may say that one great branch of the Christian Church, the Roman Catholic, neither permits nor sanctions divorce upon any ground whatsoever.

"The Protestant Churches are divided into two general parties, the Churches which permit and sanction divorce upon one ground only, adultery, and those which either by creedal statement or by common practise recognize many other grounds. Altho a Protestant of Protestants, a Presbyterian of the Presbyterians, descendant of those who signed the Covenant on the tombs of Edinburgh with their blood from their own veins, I blush when I reflect upon the common practise of a great part of the Protestant Church in regard to divorce and marriage.

"In the Episcopal Church there is a direct inhibition which prevents the priest or rector from marrying others than the innocent party where the divorce has been granted on the ground of adultery. But there is nothing to show that the members of the Episcopal Church who have been married other than as the law of their Church doth allow, are denied the privileges of communicant membership, or if officers of a congregation, are barred from the exercise of the functions of such offices."

* * * *

"If a strict adherence to the deliverance of Christ on marriage and divorce seems a severe course to follow when dealing with particular cases, let it be remembered that loyalty to the command of Christ can work but good to mankind in general. The divine laws are not given to us in order that we may indulge ourselves, and the very book which contains the revelation of the law of God exhorts us to deny ourselves and subordinate the pleasures of time to the principles of life everlasting.

"Among those who profess and call themselves Christians the present crisis in social morality calls for a new dedication to the ideals and laws of Christ and a purpose to obey them at any cost. Nothing less than this will have the slightest effect in healing the open sore of humanity. The trouble with our world to-day is a very ancient disease; the vast number of people are, as St. Paul wrote to Timothy centuries ago, 'lovers of pleasure rather than lovers of God.'" (Dr. Clarence Edward Macartney, former Moderator of the Presbyterian General Assembly)

It may be well to remark that sexual intercourse should be sought in the happier moods, as the contented and happy state of the mind has a powerful bearing on its proper performance.

But little needs be said of those rarer cases where the sexual capacity of the male is far inferior to that of the female. Save in the case of impotency of the male, nature usually affords a remedy. Such women usually have a high potential motherhood, and unless criminally frustrated their sexual power is pleasantly absorbed in the conception and bearing of children.

The vivacity and mental enlightenment which animates a woman when her sexual emotion is lawfully and properly aroused, and when her reproductive function is perfect, establishes for her a secure place in her husband's love, and concentrates his desire upon her alone.

In cases of sexual inequality where the woman reaches sexual orgasm more slowly it is well for the husband to encourage confidence in his companion by assuring her that she will rise in his esteem by developing her sexual powers. Long practice in restraint makes it difficult for the woman to realize the lawfulness and beauty of unrestrained sexual indulgence. By love and caresses she gradually gives herself, and after these preliminaries it is better to allow her to take the initiative and become the leading principal in the act.

Save in case of emergency, coitus should never be abruptly terminated. Physical reciprocity may not always be at once attainable, but psychic reciprocity is under control of the will, and should always be present. The slower response of the woman is at times irremediable. There are cases where she will never feel sexual orgasm, but in most cases if the husband's embrace endures, and he endeavors by intense love and caresses to bring the woman to her lawful *plena voluptas*, her happiness will be assured. For this reason he may manipulate the woman's erogenous zones. The woman also may by manipulation complete her orgasm. This is never necessary if the husband rightly plays his part.

It is recognized by moral theologians that the reversal of the ordinary "situs" in the act of sexual union intensifies sexual emotion, and for sufficient causes is allowed. Thus to enable the woman to respond harmoniously to the climax in the male the act of aggression may be transferred to the female, and the male may become in a measure passive to adjust the inequality between them.

The common opinion of theologians demands a special reason to allow a change of the conventional *situs* in coitus. There seems to be no ethical principle which establishes any definite *situs*. The ethical law demands that the seed be not wilfully wasted. There is no danger of such frustration if the situs be reversed, or if the coitus be a *latere* or *more pecorum*. Therefore the situs is indifferent. Some physicians advise the coitus *more pecorum* in pregnancy.

"In some cases, certain psychical influences which affect the intensity of the voluptuous sensation, manifest its significance. Thus, in some instances, the influence of stimulation of the clitoris in leading to conception has been clearly shown; in others, the performance of coitus in some unusual position, varying with the woman concerned, is alone competent to arouse sexual sensibility to its full extent, and to bring about the orgasm. One occasionally receives confidential information from a husband that his wife experiences a voluptuous sensation only when coitus is performed in the lateral posture, or *more bestiarum,* or in the *situs inversus,* etc." (Kisch, op. cit.)

The best opinion forbids coitus during pregnancy, owing to the danger of abortion and of sepsis.

"*Coitus during pregnancy.*—This is a subject on which much has been written, and deservedly, because it is of great importance. Many women have a distaste for intercourse during this time; in others the desire is increased, rarely to nymphomania. There are many reasons for forbidding coitus during gestation:

"First, the danger of abortion, which is caused by the impact of the penis against the cervix, and the great congestion of the parts during the act. No doubt the frequency of miscarriage in the newly married is due to this cause.

"Second, the nervous shock is not well borne by a woman whose nerve energy is already overtaxed. It aggravates the leukorrhea, and often increases the nausea and vomiting. In some cases the presence of the husband incites an attack of vomiting, and removal of the patient from the home may be necessary.

"Third, animals do not copulate when the female is pregnant, and, while the habits of other animals do not guide men, in many cases it would be wise for him to follow their instincts.

"Fourth, the danger of infection. This is a real danger, the author knowing of two cases where severe puerperal fever was in all likelihood the result of this pernicious practice. The danger, of course, is greater in multiparae, in whom the cervix is patulous.

"Other reasons that have been given are more or less fanciful—for example, that it makes the child sensual, that it weakens it, that the wife will lose respect for her husband. The danger from coitus is greatest in the first three months, when usually the fact of pregnancy is not always sure, and in the last three months, when the abdominal tumor is large and the element of infection more prominent. It is wise to restrict the practice to the intervening months, or, better, advise against it entirely.

"Parvin devotes some space to this subject, and refers to the distaste of coitus in the wife as one of the signs of pregnancy mentioned by Susru-fa. African tribes and other savages forbid it, the Chinese and Indians, likewise. The Talmud forbids it conditionally. Swift in his terrible satire on the human race, in 'Gulliver's Travels Among the Houyhnhnms,' says that 'this is such a degree of infamous brutality as no other sensitive creature arrives at,' that is, 'that the She-yahoo admits the male while she is pregnant.'

"The ancient Irans, Medes, and Persians punished the man heavily for such an act; he received 2000 lashes and was compelled to carry 3000 loads of heavy and light wood to the fire, sacrifice 1000 small animals, kill 1000 snakes, 1000 land lizards, 2000 water lizards, and 3000 ants, and build 30 bridges over flowing water (Ploss)." (De Lee)

De Lee reports of two deaths from sepsis from coitus within a few hours of the delivery of the child. In one of the cases the coitus ruptured the membranes, and brought on a practical abortion. He draws the following just conclusion:

"Under asepsis of the patient may be mentioned abstinence from coitus during the last month of pregnancy. The danger of such a bestial practice is a real one, as the two cases just referred to will indicate."

"Sexual intercourse must be restricted during pregnancy; and it should be wholly abstained from during what would have been the regular menstrual periods if pregnancy had not occurred, for the reason that abortion is apt to take place. It is most harmful during the early and late months of pregnancy. Sexual intercourse is distasteful to most, and harmful to every pregnant woman." (W. Grant Hague)

"All causes of mechanical irritation, especially those which operate directly upon the womb or neighboring organs, are strictly forbidden. Violent mental emotions are deprecated as highly injurious. Both of these dangers are certainly combined in coition, and both are directed immediately upon the organ in question, impeding the process of gestation, and therefore working serious injury to the developing germ, or causing pain, congestions, inflammations, floodings, and miscarriage. The celebrated accoucheur Levret attributes to coition the greater number of abortions of which the causes are otherwise obscure. . . . Abortions during the first few days after conception are exceedingly frequent, and often occur without the knowledge of the parties. A woman 'goes over her time' by a few days and then has some pain and considerable flooding. She regards as delayed menstruation what, in fact, was a veritable conception; and these abortions are very frequently repeated, eventuating in broken health and sterility. By far the most common origin of such evils is the fault in question. The author has treated many such cases where, his advice being followed, the evil has ceased. The remedy is obvious." (Dr. N. F. Cooke)

In human conduct an act may be very unprincipled and yet may not be actionable. Thus in the moral order we may not forbid under pain of sin all that is selfish and cruel. The border cases of human conduct must be decided in favor of the penitent. There is no doubt that every pregnant woman has the right to refuse the conjugal debitum. The fear that the husband may by this refusal be driven to illicit practices is of no avail. A man whose conduct has no firmer basis than that stands outside of the decent social order.

However we may not always convict of sin a man who demands coitus of his pregnant wife. We accord her the full right to refuse. Liguori gives the following opinion:

"Caeterum mihi arridet sententia, quod coitus cum praegnante non possit excusari a culpa veniali, nisi adsit periculum incontinentiae vel alia honesta causa."

In commenting this passage Gury declares that the just cause is rarely absent. Gury surely forms a low estimate of the honor and decency of humanity. His opinion is disproven by experience.

If a decent regard for the pregnant wife will not restrict coitus, it should be most gentle: in the last days before delivery it is surely unlawful.

The pregnant woman should lift no heavy weights; should not extend her arms upward in such a way as to strain the abdominal muscles; should not strain at stool; should not exert herself in any way which may displace the womb or unduly agitate it. Vivid emotions are bad.

Touching coitus post partum Capellmann truly declares:

"Not to speak, however, of the indecency, which is still greater here than during menstruation, the copula appears to me, at least if it takes place during the first few weeks after parturition, as a sheer act of rudeness to the lying-in woman. The wife has just passed through the most important period of her life; her pains, although physiological, have been very severe and these same in the generative organs; so much, that even the healthy lying-in woman feels herself very much weakened and distressed; and there must be, indeed, a rather bestial concupiscence in the man to ask the marital debt at such a time. Certainly, the wife will not ask for it during the first few weeks, unless incited by a morbid affection (*nymphomania puerperalis*). If, in all this, there is not enough to satisfy a healthy conscience that the thing in question is forbidden, then more emphasis must be given to the fact that the act, at this period, is in the highest degree injurious to the wife. The danger is the greater in proportion to the smallness of the interval that separates the act from the delivery. The lying-in period leads to a great many affections which are then, indeed, simply physiological, but which would be considered morbid at any other time. The reconstruction of the enlarged uterus requires a greatly heightened activity of the organism; nay, according to more recent investigations, a total absorption and renovation of the same takes place. The processes in the generative organs directed toward this end, and the changes and lesions caused by gestation and parturition, of themselves afford a predisposition to various disorders: such as floodings, inflammations, changes of position. That the direct local irritation incident to the act, and even the general excitement caused by it, cannot but be injurious, is indisputable. The danger is the greater, as the time is nearer to delivery. The processes mentioned above are of greatest energy during the first two weeks. At this time, also, the prostration of the female's strength is greatest. After this, the danger becomes less; but experience proves sufficiently that the slightest injury may have the worst consequences, so long as the generative organs have not returned to their normal condition. Now, the uterus does not return to its normal state before the expiration of six weeks. At this time, again, the menses reappear, if the woman does not suckle (in women giving suck they delay longer), and the organism gives the signal that it is prepared for a new generation.

"For the reasons stated, I regard the copula as absolutely forbidden during the first two weeks after delivery, as it then may be very injurious to the wife. Even during the following four weeks, I do not regard it as allowable generally. But the moralists must decide what reasons will suffice to counter-balance the danger of serious injury to the wife, which, although lessened, remains still imminent." (Capellmann, Pastoral Med.)

In my judgment such reasons do not exist. Of course the same law may not be laid down for all women nor for the same woman at all times. Some deliveries shatter the woman's organs more than others. It is a sure moral principle that the man who demands the marriage due before the puerpera has fully recovered, sins in the degree that his act endangers the woman's life.

The function of lactation does not contraindicate coitus.

In the Old Testament a man was severely inhibited from coitus with the menstruating woman. That law is obsolete.

In the Yajur-Veda of the Hindus Susruta, one of their chief medical writers declares:

"Pregnancy most readily results from coitus during menstruation. At this time the os uteri is open like the flower of the water lily in the sunshine."

There is no grave prohibition of coitus during menstruation. The belief that the child begotten of such intercourse would tend to be leprous or monstrous is a fable. Nevertheless coitus during the menstrual period is contraindicated for the following reasons:

1. The woman's organs are then in a state of congestion: by the excitement of coitus in this state of hyperemia disorders of the female generative organs may follow.

2. Owing to the innate aversion of woman to reveal her menstruation, coitus during this period is an indecent use of marriage. Every woman has the right to refuse the marriage due at this time.

Leukorrhea and intermenstrual bleeding are pathologic: such case demands the physician and his advice must regulate the conjugal relations.

Children conceived during grave drunkenness of either or both parents are defective: hence coitus should not take place in such state. A wife should repulse the embrace of a drunken husband.

We have quoted Dr. Morrow on syphilis: it is a grave crime by coitus to expose the uninfected conjux to infection and to act to bring into the world a syphilitic child. The same may be said of gonorrhea.

In contagious diseases moralists and physicians forbid the copula. In non-contagious diseases coitus is forbidden *sub gravi* if there be reasonable danger of death *propter coitum.*

The physician's advice must be invoked and followed. No grievously sick woman is obliged to submit to the conjugal embrace.

It is impossible to establish a standard to regulate the frequency of coitus. Much depends on the health, social conditions, mode of life, etc. The *conjuges* who do not restrict birth seldom commit excess. The sexual power has great variations.

At München-Gladbach, during the World War the French Army Regulations for legalized prostitution limited to ten the number of men that every prostitute daily was to receive.

In 1902 Pope Leo XIII was invoked to dissolve a marriage whose consummation was declared by a proper judicial process to be impossible because of a psychic impediment. The principals had attempted coitus for the space of a year without success. The woman was perfectly formed. All the signs of virginity were found in the medical examination of her body.

An unbroken hymen is the most convincing sign, although not absolute.

The bridegroom was sexually perfectly developed. He declared to the examining physician that before his marriage he had coitus with women sometimes as often as twelve times per diem.

In less authentic cases there are reports of greater male activity.

Of course this is a gross abuse of nature. Every good principle is absent from such excess. The excessive irritation of the mucous membrane of the uterus gives rise to chronic metritis and thence sterility.

In the male, excess in venery may lead to sexual frigidity, distaste of normal sexual delights and sexual perversion.

In general coitus more frequent than once in twenty-four hours is excessive.

By moderation of physical movements and by psychic control the act may be prolonged, thereby insuring the reciprocation of the woman and heightening the lawful pleasure.

"The coitus interruptus, coitus reservatus, simple or antiseptic douching after coitus, wearing of coverings for the penis, or obturators for the uterus, etc., are all unphysiological, and many of them untrustworthy. A physician can never sanction anything which is frankly unphysiological, and should explain to his patients that the act of intercourse consists of three distinct stages: (1) The male organ becomes completely rigid, passing from a state of flaccidity into erection. (2) The second stage comprises intromission, friction and the orgasm or crisis. (3) The act of copulation is not concluded by the orgasm. The penis, therefore, should not be withdrawn at once, but allowed to remain until the gradual subsidence of the erection leaves it in its original flaccid state." (Edgar)

The author agrees with the opinion of Edgar, save in the case of coitus reservatus (coitus restricted to the immune period). It is evident that such act is not unphysiological. It is not indeed the ideal conjugal relation, but in extreme cases is to be recommended.

In cases wherein pregnancy threatens death or invalidism to the mother Edgar advises the obliteration of a portion of the Fallopian tubes by the vaginal route. This is a preventive remedy that is never lawful.

Rape signifies carnal knowledge of a female against her consent. If the female be under the age of consent, coitus or attempted coitus with her is rape even though she consent. The testimony of the prosecutrix alone is legally competent if supported by medical testimony. False accusations of rape are not uncommon. There may be rape without defloration. Edgar examined 600 accusations and could find evidences of penetration in 386. It is very difficult to deflower a resisting woman. In fact, good authorities believe that a conscious, vigorous woman can not be raped by a single individual. Two assailants may accomplish it, or it may be accomplished while the woman is unconscious.

It is far more difficult to prescribe remedies for the women of Malchow's fourth class. If the defect lie in a wrong mental attitude towards the act of copulation the remedy must be to correct this ignorant attitude. This will not be an easy task, as the prejudice is usually very deep seated.

It is often advisable for the woman to consult a competent surgeon, as some malformation of the organs of reproduction may be responsible for the frigidity. Cases are found where the surgeon is called on to distend the vagina to permit the entrance of the male organ, or to perforate an abnormal hymen which may obstruct the vaginal entrance.

There are, however, cases of incurable frigidity, and these deserve much sympathy. However, the lot of this class of women is not altogether hopeless. They may become pregnant and become ideal mothers, and feel for their children the full force of a mother's love.

The outlook, however, is not very hopeful. Frigid women are often incurably barren.

Barren marriages may be the result of impotency of the male or of sterility of the woman.

All biologists recognize that inbreeding weakens a stock, whereas cross-breeding strengthens it. Marriage among kindred should be avoided. The closer the degree of kinship, the greater the contraindication.

"The dangers of inbreeding are believed by Hegar to be, under present-day conditions, so considerable that he would allow the marriage of near kin in exceptional cases only, and where the circumstances are peculiarly favorable—for instance, where both parties to the projected marriage are in excellent health, and where there is no great similarity between them in feature or mental type. Certain anomalies transmitted from remote ancestors, dependent on deeply-marked peculiarities of the germ cells, may be so developed by inbreeding as to become absolutely fixed characteristics. If the morbid manifestations can be traced back for several generations, if the bodily defects and disturbances of development (the so-called stigmata of degeneration), are well marked and numerous, if the functional disorders of the nervous system and of the sense organs are pronounced, leading to idiocy, insanity, epilepsy, congenital deaf-mutism, blindness, instinctive criminality,—there is in such cases little or no hope of the regeneration of the family. It dies out, because the members are sterile; because they are confined in prisons or asylums; or because the children, if any are born, are deficient in vitality, and fail to reach maturity.

"Mayet has made a statistical investigation to determine the influence of consanguineous marriages in the pathogenesis of mental disease. He finds that the number of those congenitally affected with mental disorder is twice as great in the offspring of consanguineous marriages as in the offspring of crossed marriages; in the case of simple mental disorder, of paralytic dementia, and of epileptic dementia, the ratio is actually greater than two to one (the actual figures are 218, 257, 208 : 100). Thus we see that when there exists any cause of inheritable mental disorder, blood-relationship of the parents more than doubles the danger to the children. In the case of imbecility and idiocy the danger is less in this respect (the ratio is 150 : 100); the factor of inheritance plays a less prominent part than in the case of other psychoses.

"It was remarkable that among the offspring of marriages of nephew and aunt, cases of mental disorder were almost entirely lacking. Among the offspring of marriages of uncle and niece, the inheritance of mental disorders was more prominent than among the children of first cousins. It is interesting to determine the influence of blood-relationship in cases in which the existence of inheritable predisposition could not be proved. In these cases, as regards simple insanity, paralytic dementia, and epileptic

dementia, the number of cases among the offspring of consanguineous marriages was only one-half as compared with the offspring of crossed marriages; whereas in the case of imbecility and idiocy this ratio was reversed. In idiocy, where inheritance, generally speaking, plays a small part, the origination of the disease would often appear to depend directly on the blood-relationship of the parents; whilst as regards other forms of mental disorders, if there is no inheritable predisposition, blood relationship in the parents appears to be a positive advantage; where, however, a family predisposition to insanity exists the likelihood of actual insanity appearing in the offspring is notably enhanced by a consanguineous marriage." (Kisch)

In the year 1859 a Commission under Dr. Norris published the following table:

Kinship—	No. of Marriages	No. of Children	Children in Good Health	Children Sick or Deformed	Per Cent. of Sick or Deformed Children
Cousins of third degree	13	71	42	29	40.8
Cousins of second degree	120	626	360	266	42.5
Cousins of first degree	630	2911	955	1956	67.2
Descendants of Cousins	61	187	64	123	65.7
Uncles and Aunts with nephews and nieces	12	53	16	43	81.1
Double Cousins . . .	27	154	21	133	96.4
Incest in full sense . .	10	31	1	30	96.1

The legislation of the Church forbids such marriages.

Companionate Marriage.—Our age has surpassed in moral decadence even pre-Christian paganism in its widespread sanction of the so-called companionate marriage.

It is evident that such a union is not a marriage, but a mere fornicarious pact. The principals shamelessly distort the law of God by exercising an act that is essentially an end of the divine institution of marriage without establishing the aforesaid state. It is simply a shrewd convention whereby the slaves of carnal lust may practice unrestrained libertinage without penalty of statute law.

All that makes the consummation of lawful marriage noble, beautiful, holy, is absent. It is a monstrous surrender of spiritual man to the unredeemed flesh. When the woman gives her body to a lawful husband in a permanent union, she feels that she has not divested herself of her chastity. She has entered into a union established by God and made the closest, most intimate of all social unions. She is one flesh with her lover.

The advocates of this unholy convention allege that it is made necessary by the evil of divorce. It is a strange method of reasoning to attempt to cure a social evil by approving a greater expansion and exercise of the same evil.

We confidently believe that this brutal attack upon the principles of fundamental morality shall not long endure.

EUGENICS

In our time there has arisen a most dangerous movement called Eugenics. The science is defined by Galton (1822-1911) to be "the science which deals with the influences that improve the inborn or native qualities of a race, also with those that develop them to the utmost advantage."

The materialistic Eugenist declares the chromosomes to be the carriers of the traits from parent to offspring. He improves plants and animals by selective breeding; therefore he would apply the same principles to man. Here is the cardinal error of modern Eugenics, to lose sight of the higher spiritual estate of man. Human nature is more than an animal. Therefore it must not be made subject to the laws of stock breeding. The irrational animal is entirely subject to hereditary traits. By virtue of man's free will he can break the influence of these traits. It is the entrance of this new factor, free will, into the equation that compels us to make special laws for man.

"Of late, however, eugenics has acquired a group of spokesmen and spokeswomen—self-appointed, it is true—who have undertaken to point out the great dangers lying ahead of us if we do not embark upon an extensive eugenics program. People who fear race suicide, advocates of birth control, and intelligence testers have all undertaken to spread the gospel of good breeding. It is but natural that with such publicity agents and with the help of journalistically minded pseudoscientists the teachings of eugenics as they are reaching the public should take on certain unscientific, not to say jingoistic, aspects.

"For many years, but for the last 10 or 15 in particular, we have frequently had our attention called to the fact that the old native stock in the older settled parts of the country, particularly the Northeast, had a much lower rate of increase than the newer immigrant stocks. This fact of a different birth rate alone has been sufficient to make many people feel that the future of our Nation is imperiled and has caused much discussion among those who are thus dying out. There is no proof as yet that it has caused them to raise larger families. (Occasionally, no doubt, it has influenced a couple to add a child or two to their contribution to Anglo-Saxondom.)

"Here, however, was a definite situation to which to apply eugenics. It was assumed that the upper economic classes, largely composed of old stock, were good stock and, consequently, that it was dysgenic if this stock did not maintain its proportion to the whole. So far as I am aware no one has questioned the general statement that this part of our population is good stock. Their success in life has proved it conclusively to practically everyone. For the time being we will let the matter rest there, only

asking: Good for what? and: What is implied in calling the process dysgenic?

"About the time it became generally known the old stock was dying out in the industrialized North the advocates of birth control seemed suddenly to awaken to the situation, and they suggested that if the lower classes, as well as the upper classes, were to control the size of their families, then there would be no relative diminution of the quantity of the better stock, and there was no need to fear for the future of the Nation. Every advocate of birth control is ipso facto a practical eugenist. They inevitably talk of the need for quality in population and the danger of too great numbers.

"Finally come the intelligence testers and put the capsheaf on the shock of eugenic knowledge by telling us what is good stock and what is poor stock. They tell us that somewhere around 5 to 15 per cent. of the people are of good native ability, and that about one-fourth of these are of distinctly superior quality. From this group must come those fit to assume leadership—those having initiative and energy and constructive imagination. They also tell us they can pick out those having different degrees of 'native intelligence' ranging all the way from the feeble-minded to the genius. Furthermore, they have already gone sufficiently far in their testing to assure us that in this country nearly all of those with superior endowments are to be found in the upper economic classes, and that they are nearly all of old Anglo-Saxon stock." (Prof. Warren S. Thompson)

There are many monstrous fallacies in the eugenic theory.

1. It is against faith, experience, and common sense to substitute for the doctrine of free will the theory of biologic determinism. Many of those who have rendered the greatest service to humanity sprang from a weak source.

2. Economic and intellectual success are not the true tests of human fitness. Dives went to Hell; Lazarus to Heaven. Some of the greatest criminals were men of genius: the Curé d' Ars is a saint.

The really unfit are the selfish birth controllers, who have no interest in the enduring life of the race, no faith in a higher life.

The really unfit are those who devote their mental alertness, tenacity of purpose, and tangible goods to purely individual and selfish ends. They are merely thick-skinned degenerates. They contribute nothing to the spiritual enrichment of life. Nature declares them unfit: their generations dwindle and die.

The Catholic Church approves a Christian Eugenics. The whole trend of her ethics is to preserve the ideal status, mens sana in corpore sano. But she cannot dehumanize man and bring him down to the plane of the beasts that perish. The Church evaluates all the issues of human life by their relation to the ultimate end of life, God and Heaven.

Mendel's law may be applied to plants, and in a modified degree to brute animals. They are completely subject to biologic determinism. Atavistic traits play a mighty role in human life, but they never reach an inflexible control. The rational soul of man introduces into his life the

power of will, the influence of education and environment, the grace of God. No man is born so evil that through these attributes and adjuncts he may not break the bonds of his inherited tendencies. In all the ages of human history men have done it. The mother of St. Stanislaus was an incestuous murderess; King Ahaz, the monster of impiety, begot the pious King Hezekiah; King Amon begot the saintly King Josiah.

No man is incorrigibly evil. There is no law of history, that a criminal always begets a criminal.

It is false to declare that, "We are what we are by heredity." (Forel) Heredity plays a part, a large part: it does not eliminate free will.

"Every evil man either on this account liveth that he may be corrected, or on this account liveth that through him a good man may be exercised. . . . Because inasmuch as any one of them is evil, whether unto the end he is to persevere, we know not; and ofttimes when to thyself thou seemest to have been hating an enemy, thou hast been hating a brother, and knowest not. The devil and his angels, in the Holy Scriptures have been manifested to us, that for fire everlasting they have been destined. Of them only must amendment be despaired of." (St. Augustine on LV Psalm.)

St. Thomas (*Summa Theol.*, III, q. XVI, ad 2.) defines a human person to be "a complete substance having an intellectual nature, subsisting by itself and apart from other substances."

In this master definition we recognize the dignity of a man and his separateness from other beings. Causes may influence him, but he is himself.

It is an appalling fact that the highly endowed being described above often falls from the estate for which God fashioned him. It is a pity that this descent often begins in childhood, from the age of six to twelve. The age group of twenty-one to twenty-four has the highest ratio for grave crimes. We have murderers at 15 years of age. In the Court of General Sessions of New York City, 62.8 per cent. of 3053 offenders investigated were less than twenty-five years old. Crime directly costs the Country over a billion dollars per year.

To meet this terrible state of things in 1926, His Eminence Cardinal Hayes of New York entrusted Edwin J. Cooley, Chief Probation Officer, Court of General Sessions, New York City, with the special probation work of the Probation Bureau of the Catholic Charities of New York. This has led to the creation of a publicly salaried probation bureau, which began operations at the aforesaid Court in 1927.

Mr. Cooley published his book, Probation and Delinquency, in 1927.

There is much in it pertinent to the present theme. We refer the reader to it as a source.

The investigation of the delinquents was scientific and thorough.

The mental classification proceeded according to Terman's scale of rating. Twenty-five per cent. were mentally defective.

An exact physical examination was conducted.

Heredity was closely studied.

"It was only in rare instances that criminal records of the defendant's parents, brothers and sisters, or other relatives were discovered." The child's social relationships influenced him more than his heredity.

"*Heredity.*—The discussion of crime causation through the ages has at various times centered about heredity and its influences on criminality, some students going so far as to find in criminal parentage the explanation of the progeny's delinquency. The criminal, by their theory, was born a criminal.

"Today, however, it is regarded as evident that no one is born a criminal, but that each individual is ushered into the world with potentialities that may or may not become anti-social actualities. All inherit physical strength or weaknesses, all have psychic tendencies, appetites, and instincts, which combine to produce temperament with definite propensities for certain forms of conduct and character.

"Gillin, in enumerating personal characteristics derived from ancestors, which often occasion a trend of conduct delinquent in nature, considers most important—physical and mental inferiority, insanity, superabundance of physical or mental energy (of an aberrational form, though not necessarily a defect), and nervous instability. Our records present many instances where one or a number of these inherited factors were found that seemed to have a definite relationship with criminal acts.

"In much the same way as there are transmitted to the child predispositions to bodily strength or weakness, which provide varying degrees of disease resistance, there are also inherited certain powers of resistance to moral wrong with which may be combatted suggestions of evil. These inherited psychic propensities are different in each individual and, though entering into the fundamental essence common to all men, set each one off as unique. The variations present in the native psychic equipment of men are, like finger-prints, as many as there are men.

"It is, therefore improper to ascribe to heredity the transmission of a criminal disposition as such, for its operation is an indirect one acting through such constitutional conditions as a dull or defective brain, an unbalanced or erratic temperament, or the over-development of some single instinct. Each individual, then, is born with certain physical and psychic advantages or disadvantages which may subsequently form the basis of either misconduct or right living. The result will depend largely on the environment into which he is thrust by the accident of birth and the ideals of life which it influences him to elect." (Op. cit. pp. 354-356)

On Nov. 19, 1925, Judge Charles W. Hoffman, of Cincinnati, in a lecture to the City Club declared:

"No child is beyond redemption, even though he is deemed incorrigible and sentenced to a juvenile penal institution.

"Give a child the proper environment and training while young, and in most every instance he will overcome what taint of heredity he may possess.

"Remember, every child must be given a chance. Some of our 'bad' boys have in later years turned out to be national leaders."

STERILIZATION

It follows that it is unnecessary for the preservation of society to sterilize criminals.

That a larger percentage of criminals are found in the progeny of criminals confers not upon the State the right to sterilize such men.

The State has no dominion over the life of its members nor over their bodily members. When it exacts the life of a criminal it acts as delegate of God. The good of society may demand the cutting off of a criminal, just as the good of the human body may demand the amputation of a diseased member. In the sterilization of degenerates, idiots, and criminals the State encroaches on the forum of God.

In former times asexualization was effected by removing the male sexual glands and by the removal of ovaries or womb or both in woman. These were difficult and dangerous operations. Modern surgery has found an easier and less dangerous method. In the male the vasa deferentia are cut or ligated. This allows the man to experience sexual feeling and ejaculation of the secretions of the non-seminiferous glands.

Etymologically vasectomy means the cutting out of the vasa, but by general usage the term denotes all methods of interrupting the function of the vasa. Vasectomy induces no atrophy of the testicle: the vasectomized man is able to perform coitus, but the glandular secretions ejected during the act contain no spermatozoa. If the vasectomy be by catgut ligation of the vasa, the ligature will be absorbed and the lumen freed. Belfield of Chicago records a case where the semen forced its way through a ligature made of waxed silk.

If the vasa have been severed, they may be sutured and the lumen restored, but the operation is difficult owing to the narrow lumen. A scar forming at the place of joining might occlude the lumen. To obviate this, some surgeons introduce a piece of catgut into each end of the severed tube, and leave it in the sutured tube to be absorbed.

Temporary ligation of the tube may be allowed where permanent sterilization is forbidden by the moral law. It might be conceded that a temporary ligature be lawful as a remedy for uncontrollable masturbation, or obstinate spermatorrhea.

"In extreme and apparently incurable cases of real spermatorrhea, in cases where the patient is being greatly damaged in body and mind by the constant drain, 'most radical measures' are justified, and vasectomy, as advised by Lydston, should be performed. Of course, the patient must be made to give his consent with the full understanding as to the consequent sterility. The operation itself is easy and harmless.

"Of late I have followed Belfield's recommendation, and in place of performing vasectomy, occlude the vas with a silk ligature. This procedure has, as Belfield emphasizes, the advantages that it surely occludes the vas, and that while the vas is occluded it does not obliterate, and its patency may be restored by removing the ligature. Under these conditions one does not have to hesitate so much as formerly before resorting to this therapeutic measure." (Vecki, op cit.)

If it should be established that such pathologic state demands vasectomy, even complete vasectomy, to save the health of the individual then it must be lawful: it would be the amputation of a member to save the body.

The opinion of Prümmer, that in case of an obstinate habit of masturbation, which threatens to bring on idiocy, it be lawful to submit to sterilization is untenable. Such pathological state never exists. We may not deny that vasectomy in some degree may moderate the tendency to masturbate. Dr. Carrington of Virginia (1910) reports cures of masturbating convicts by vasectomy. O'Malley concedes that vasectomy tends to check masturbation.

The testimony of other authorities is contrary to this view. My experience leads me to believe that an operation which leaves to the testicles their unimpaired power to secrete the basic sperm in no way decreases sexual desire. However, it may be granted that if the weight of scientific authority establish a high degree of probability that vasectomy may bring abnormal sexual desire under moral control, ligation may be allowed.

Removal of the testicles in such case, is not allowed.

On this point the view of St. Thomas is clear and convincing:

"A (corporal) member is not to be cut off to save the whole body, save in case in which there be no other means to save the whole body. In the spiritual order there is always a way to help other than by the cutting off of a member, because sin is subject to the will. Therefore never is it allowed to cut off a member in order to avoid sin." (II, II, 65, 3)

"It is unlawful to mutilate oneself unless it be necessary to preserve life, for no one is lord of his members." (Lessius apud S. Alphonsum)

"It is unlawful to castrate oneself to preserve chastity or allay temptations, because castration is not necessary to obtain that end." (St. Alphonsus)

"It is not lawful to castrate oneself to obtain a spiritual good, viz., to avoid incontinency or to allay temptations; because that relief may always be obtained by other means: Moreover such mutilation renders a man impotent, but relieves him not of carnal temptations." (Noldin).

This is overstated. Castration proper greatly reduces sexual desire. Witness the bull and the ox; the stud and the gelding. The force of all the foregoing arguments lies in the fact that by the grace of God man is able to develop his character by a spiritual combat, and he is obliged by the laws of his being to wage that warfare. By the excision of his sexual glands he becomes an unnatural coward. His continency is not a human act; he impairs his character.

A celebrated question touched the castration of boys in order to develop in them a soprano voice. St. Alphonsus condemns such act:

"Parents sin who castrate their sons, even with their consent, to fit them to sing." (Theol. Moral. IV, 4)

This is the opinion also of Laymann, Busembaum, Sporer, Lugo, Bonacina, Diana, the Salmanticenses, and others.

Pasqualigo (1664), Tamburini, S. J. (1591-1675) (auctor nimis benignus), Mazotta, S. J. (1746), Elbel (1759), Trullench (1640), Salon (1538-1620) allow castration of boys for this purpose, if the boys be willing.

These benign authorities adduce two arguments:

1. It is a considerable temporal advantage to the boys, and promotes the decorum of the divine chant.

2. The practice is tolerated by the church.

Neither argument is conclusive. Man has no full dominion over his members: it abases the ethical law to compel it to admit the unsexing of a man and the consequent destruction of his virility and his character for hire. It is depraved taste that loves the song of eunuchs.

In the corruption that invaded the human element of the Church this practice may have been connived at. In other cases the innocent victims may have been allowed to sing in the Churches; but there is no proof that any authorization of the practice ever emanated from a competent ecclesiastical authority. Both the practice and the opinions which defended it are obsolete.

Pope Benedict XIV (Syn. Dioces. XI, 7, 4-7) condemns the practice and admonishes the bishops to remove from church choirs all eunuchs, and also to remove that genus of music which demands the song of eunuchs. Pope Benedict bases his declaration on the solid argument that man is not lord of his members; he cites many cases wherein men were condemned by the Church for such mutilation.

It is worthy of note that the learned pontiff in condemning the act of Origen explicitly declares that Origen effected his eviration by means of a drug. This was formerly my opinion, but I am led to doubt the existence of a drug that would work this permanent effect. Modern Medicine recognizes anaphrodisiacs, but I find no evidence of a drug of the potency asserted in the case of Origen.

Pope Benedict declares the mind of the Church as follows:

"The law of the Church is not changed: it punishes by irregularity a eunuch who, without necessity of saving his life, consents to his castration. Neither is a man free from sin, according to the aforesaid common opinion, who, without the aforesaid necessity, performs it (castration) to preserve the sweetness of his voice, that he may be a fit church singer."

Mr. Havelock Ellis condemns our barbarous legislation:

"It must always be remembered that the sterilisation of the unfit, if it is to be a practical and humane measure commanding general approval, must be voluntary on the part of the person undergoing it, and never compulsory. It is probable that many persons have been prejudiced against sterilisation, as I also have, by the reckless and violent manner in which

the method of effecting it has been advocated, occasionally in England, and often in the United States. Persons who claimed to speak with authority, have clamoured for its adoption, not as a voluntary adopted method of social hygiene, but as a barbarous punishment, to be inflicted for the purpose of inspiring terror in others, and sometimes to be applied to persons whose acts were not really anti-social at all."

Man has not the dominion of his members, and therefore may not lawfully authorize his sterilization save in the interest of his life, as aforesaid.

Dr. Saleeby, the foremost eugenist of England, declares:

"We are dubious as to the help of surgery. . . . It is necessary to be reasonable, and, in seeking the superman, to remain at least human."

No physician may lawfully operate vasectomy and castration according to the unjust statutes of our States.

On Feb. 19, 1924, the Judge of the Probate Court of Wayne Co., Mich., directed that two boys, 12 years and 14 years, be sterilized. He also directed that sterilization be operated upon two women, one 22 years of age; the other 24 years. The Judge is a Catholic, but he declared that the law enacted by the Legislature made mandatory the sterilization of defectives.

It is the more probable opinion that this law is unconstitutional: it is certain that it is unethical. A Judge may not execute an unethical law which violates humanity's fundamental rights.

In the period since the adoption by State law of compulsory sterilization up to Jan. 1, 1927, 3951 sterilizations are recorded in the State of California. The aforesaid law has the sanction of the Supreme Court of the United States rendered in support of the Virginia law for the compulsory sterilization of mental defectives. Recently the Catholic authority, Joseph Mayer, M. D. (*Gesetzliche Unfruchtbarmachen Geisteskranker*), defends the operation provided it be necessary for the common weal. The best refutation of this opinion is the well proven truth that sterilization is not necessary for the common weal. The State as delegate of God may take a man's life as a punishment for a crime committed, and therefore may deprive him of a member, but the State may not mutilate a man in anticipation of a crime which he may commit, neither may it sterilize a mental defective merely to prevent propagation.

In support of sterilization of criminals the history of the Jukes family is often cited. The term Jukes is a pseudonym, employed to save from ignominy the worthy scions of the aforesaid family.

An investigation undertaken by R. L. Dugdale under the auspices of the Prison Association of New York resulted in the discovery that a certain Dutchman, who was a backwoodsman, left two sons, who married seventy-five years ago, two sisters, known as "The Jukes Sisters,' and have between them produced a race, which has cost the state $1,308,000. Out of 1200 descendants, 709 were traced, and of these, 140 were criminals, who had served an aggregate term of imprisonment of 140 years, 280 had been in receipt of public support, and others were either licentious or suffering from nervous disease. The history of this family forms, therefore,

a terrible study in heredity and criminology, and may be read in the 30th Annual Report of the Prison Association, printed separately (1891).

Allowing for statistical inaccuracies, it must be admitted that in the aforesaid family the atavistic tendency was bad. Even here sterilization is not the remedy. The investigator admits that there were good scions. Society has no right to mutilate or kill a human person save as delegate of God. God has not delegated to man the right to anticipate that a man's progeny shall be bad, and prevent that progeny by a mutilation. A criminal, actually thus proven, may be punished by perpetual sequestration; he may be deprived of any member, or of life; but that punishment must be for a crime committed, not for a crime anticipated. If a man be feeble minded he may become a ward of society, and thus may be sequestrated, but not mutilated.

The indications are strong that our materialistic civilization will extend the field of sterilization. In the year 1927 the right of States to sterilize insane and feeble minded inmates of public institutions was upheld by the Supreme Court in a test case from Virginia.

It must, however, be conceded that in the case of idiots the unethical character of their sterilization is not as clear as the unethical character of the sterilization of criminals. O'Malley permits the sterilization of idiots to avoid a social indecency. He also allows it in case wherein the idiot could only be restrained from masturbation by a straight-jacket. In the latter case his argument is that in a straight-jacket the idiot shall die.

"If there were a malady that endangered the patient's life, or destroyed the health of the body and it could be cured by vasectomy, the operation would of course be licit for the reasons given in the chapter on General Principles concerning Mutilation. Dr. Carrington tells us that he did vasectomy on an epileptic convict and cured him. Such a cure is doubtful as to permanence. He describes two dangerous insane negro homicides who were rendered harmless by vasectomy. In cases like those of the homicides any one responsible for them would probably be justified in having the operation done, although these two cases are the only direct ones on record. Epileptics sometimes show homicidal tendency, but it is doubtful that vasectomy would help them. The operation of vasectomy as a cure for bodily ills has a very limited field. There are very many conditions in women where it is necessary to remove the ovaries or the tubes to save life, or to cure chronic invalidism of an unbearable nature. These conditions are discussed in the chapter on Gonorrhea. There is no objection to the removal of a tube or an ovary when such removal is absolutely necessary, but the necessity must be clearly evident. There is a tendency in some surgeons to mutilate women in this manner without sufficient reason or to follow out a therapeutic theory.

"Men, like Sharp, who have done hundreds of vasectomies, say the operation commonly removes the inclination to masturbation. Masturbation is, as a rule, a moral condition, but it can, like alcoholism, come to have a large physical element. Idiots almost unexceptionally have this vice, and in them there is no morality possible. If by vasectomy they can be cured of this vice, which injures their health and is a social indecency

and a source of sin in observers, the operation would be licit in their case. When the patient is morally responsible vasectomy would not be licit, as there is no adequation between a physical evil like sterilization and a moral vice. There are cases of pathological sexual erethism which are so violent that the patients must be put into strait-jackets to prevent constant masturbation. The semen of such patients is usually devoid of spermatozoa. If the patient is confined in a strait-jacket he will die, and vasectomy, according to Sharp, will quiet such a man. Vasectomy would be permissible in these circumstances.

"The question has arisen in the case of a sane masturbator who is neurotic, weak-willed, and a confirmed addict to this vice, whether or not his vasa might be tied off by ligatures, temporarily, with the intention of removing the ligature later and restoring function. I think not. Even temporary sterilization is sterilization, a grave mutilation, while it lasts, and the condition is really moral fundamentally, and therefore not a fitting object for physical remedies.

"When vasectomy is done by the State, it is done either as a penal or as a prophylactic measure. As a general statement we can say the State in certain conditions has the right to kill or mutilate a criminal in defense of the social order; but even then any punishment, to be justifiable, must be effective and necessary, and it has to be either reformative, exemplary, or reparative in regard to the crime for which it is inflicted. Capital punishment and mutilation are effective usually, and are necessary for the preservation of society. The natural law permits the State to preserve itself against the unjust encroachments of individuals by curtailing their rights in so far as that curtailment is effective and necessary: since the natural law requires the existence of civil society, it must allow what is necessary for the preservation of that society. There is no question here of a good end justifying evil means; the means which otherwise would be evil in these conditions become good. Homicide and mutilation are not mere killing or mere maiming, but unjust killing or unjust maiming. Killing or maiming is not intrinsically wrong under all circumstances, as lying, blasphemy, and some other crimes are; nevertheless, as a punishment by maiming, vasectomy is ordinarily wrong, and therefore a law making it an ordinary mode of punishment for certain whole classes of criminals, or all criminals, is unjust.

"It is wrong because as a punishment it is neither effective nor necessary nor reformatory nor exemplary nor reparative—it lacks every quality of a justifiable punishment. In Dr. Sharp's list of vasectomies done in Indiana prisons, 176 operations were done on men who voluntarily asked for vasectomy. There is no pain, no inconvenience caused by the operation, no sexual change perceptible, but a fitting of the criminal to indulge his lust without the various inconveniences of impregnation. Instead of being reformatory, it is conducive to crime. I find only one man who objected to vasectomy. In this man vasectomy was added to life imprisonment as a punishment for rape.

"The legislatures in the States which have passed the vasectomy law all seem to have been influenced by the pseudoscientific notion that crimi-

nality is a hereditary condition, a physical disease, and not a matter of volition. This Lombrosan absurdity is now held by no physical scientist, and from an ethical point of view it is nonsense. Moreover, if the State vasectomized all the criminals in the jails, this method would not appreciably affect the supply of criminals, nor reach an appreciable minority of the criminal class, as the most dangerous criminals are not in jails.

"The operation is not a punishment to the men upon whom it is done, but it is an unnecessary deprivation of an essential right of these men, an excessive, ill-ordered attack on a primary right of man, and an act of violence against human nature and its Author without adequate reason. The law is against the natural order because it directly deprives a man, and that against his will, of functions which are at times a moral necessity to him, and puts him into the occasion of sin. Vasectomy does not remove his venereal desires, but gives opportunity to lust; it turns the conjugal relation into mere onanism and degrades marriage into a crime. Other conditions, like military service, in which necessity obliges the State to place its citizens and thus prevent the conjugal relation, cause an indirect temporary prevention, reluctantly permitted, not directly intended. Vasectomy is an evil directly intended.

"It is to the interest of the State to prevent the transmission of hereditary disease, and in doing so it may to a certain degree curtail the natural liberty of its citizens. When the peril is great, as in a plague, the State may isolate infected individuals, and thus indirectly, but temporarily, prevent a natural right—namely, the conjugal relation. It may even perpetually isolate, as in leprosy. Vasectomy, however, is a direct prevention without reason, and it is done as a direct evil means to effect a so-called end which it never attains.

"A man with Huntington's chorea, if married and if he has children, will surely transmit the disease to some of these children, and they to their children. Vasectomy on him will prevent a propagation of his kind but will cure no disease. Moreover, he is not a criminal and not amenable to punishment. The bad effect, sterilization, must be perpetual in his case or it is foolish, but the sterilization is not a punishment, nor a means of saving the health of the patient. Whatever good comes of the act comes out of an evil cause. If such a man persists in marrying, his marriage might be prevented, but that is different from mutilating him.

"The State has no *direct dominion* over the lives or members of its citizens, nor are citizens naturally mere instruments for the good of the government; on the contrary, the government exists solely for the good and utility of the citizens. The State may not take the life of an innocent person, nor mutilate him, unless these acts are necessary either (1) to protect the life or rights of individuals; or (2) to preserve the social life of the commonwealth. Now, neither of these two requisites is present when there is question of vasectomizing a man.

"The right or life of no individual is at stake. The rights of the possible children, yet unborn, are not injured, because, as these children are not in existence, they have no rights. Should they come into being, it is always better to be, even though diseased, than not to be. The methods

of cattle-breeders in dealing with human beings is not a virtue in the State, but an outrage and a degradation of human nature.

"The rights of the wife are not injured, because she personally receives no injury; and if her possible children have chorea, for example, she either voluntarily took that risk when she married, or if she did not, through ignorance, there are other means to avoid the trouble than the evil of sterilization, which in itself would render the use of marriage onanistic. If the husband has syphilis, gonorrhea, leprosy, tuberculosis, or any other infectious disease, vasectomy is no protection for the life.

"May a physician employed by the State in a prison, an institution for the feeble-minded, or a like place, do vasectomy at the command of the law? Certainly he may not, except in those rare cases where vasectomy is permissible as described above.

"The advocates of freakish legislation harp on the assertion that insanity and imbecility are increasing alarmingly, and as a consequence the entire nation is degenerating. To cure this evil we are to mutilate certain criminals and the mentally defective. It is not true that insanity and mental imbecility are increasing in a very marked degree in the United States. The number of inhabitants in this country is increasing rapidly, and as there are more people here than there were a few years ago, the number of the insane and the mentally defective has increased *pari passu,* but the percentage does not increase to any degree that calls for immoral and ineffective legislation. Only of late years have the State Governments begun to classify, diagnose, and gather up the insane and the imbecile, whom we always have had with us, and these processes have brought the defective into the light.

"Our late immigrants are not equal in race, in mental and moral strength, to the old northern European immigrants. In Philadelphia the foreign-born population gives us 44 per cent. of the indigent insane. In New York State 27 per cent. of the registered insane are not American citizens. What we need here is not sterilization, but a better control of the immigrant, a keeping out of the unfit. Again, our insanity percentage is increased avoidably by the undoubted increase of insanity among negroes. We are accountable for this because we do not care for our helpless negroes. These people are prevented by trades-unions from learning and working at elevating trades, and they are thus forced unjustly into a poverty and degradation which lead to vice and mental deterioration. The cure is not a jail surgeon's scapel, evidently.

"A system of education that ignores the will, upon which morality and virtue are based, and substitutes a sham intellectuality as elaborated by ignorant boards of education and administered by emotional, half-educated women, together with a lack of genuine religion, is a prolific source of mental and moral deterioration and consequent degeneracy in the physical and moral orders. Our American public-school system is such, and its deity is the unwashed and crassly depraved god Demos, whose bible is the evening newspaper. If we could civilize our schools, we should have no mention of legislation by vagary." (Austin O'Malley)

The argument based on the social indecency is weak. Society could not endure a convention that would allow such an extreme measure to avoid a social indecency. Moreover by other means the idiot may be restrained from abusing himself.

The second argument is also inconclusive. Death effected by nature is at times merciful. The idiot's life is not a conscious existence: it is worthless to himself and to society. We may not terminate it, but we may allow nature to terminate it. A restraint therefore that is aimed to save the idiot from evil may be employed even if *per accidens* it results in his death.

By far the greater number of the feeble-minded are not complete idiots. The range is from total idiocy and complete moral irresponsibility up through varying degrees of subnormal mentality until the line loses itself in the mass of ordinary humanity. Provision must be made for the various classes according to the degree of their mental abnormality. Sterilization by State law contemplates the lower strata of defectives: it aims to prevent their propagation. We believe it to be in every case unethical save as a necessary therapeutic remedy.

It is self-evident that it is for the best interests of society that persons of very low mentality should not propagate. This right eugenic aim may be accomplished, and is being accomplished, by the gathering of the feeble-minded into colonies, and the segregation of the sexes in such colonies. Reasonable supervision and classification will prevent sexual intercourse and masturbation. A perfect Utopia is not possible, but such method is the best provision possible.

From the fact that the mental defective may be a danger to society; may himself become a public charge; or may beget a progeny like unto himself, it can not be denied that the State has the right thus to segregate mental defectives, provided the danger be real and grave; and provided the aforesaid wards of the State be not unduly deprived of human rights.

A fine Catholic Institution is founded at Ursberg in Bavaria. It is not exclusively for mental defectives. In 1911, it registered 284 idiots, 659 mental defectives, 151 epileptics, 107 deaf-mutes, 125 blind, 99 cripples, 64 sick persons. The institution is conducted by the Sisters of St. Joseph. The inmates are classified: adequate means are employed to safeguard their physical, intellectual, and spiritual interests.

Fine colonies are founded at Waverley in the State of Massachusetts; at Sandlebridge, Alderley Edge, England; at Besford Court, England; and at Gheel, Belgium.

It is a proper Eugenic measure to prevent the propagation of mental defectives, of the tuberculous, the leprous, the syphilitic, etc.

This inhibition, however, may not excessively, as aforesaid, invade human rights.

Some States contemplate a State law to compel every nupturient to submit to a physical examination as a condition to obtain a marriage license. This would be an intolerable tyranny. Society is best governed when it is least governed. To compel the vast majority of honorable persons to submit to such a disagreeable act is not warranted by the condi-

tions of society. It would be well if all *gun-men* were searched and disarmed: should we therefore search all our citizens?

It is true that syphilis is fearfully prevalent. No statute can suppress it. No diagnosis is able always to detect it. It is one of the great evils of the tide of time, which we must fight in all lawful ways. Education should be a means of defense; but unfortunately our irreligious education promotes the evil.

From a competent survey it appears that the best medical authority does not approve the sterilization of mental defectives. A letter addressed to Dr. Ransom A. Greene, Supt. of Waverley School, Mass., brought the following valuable answer:

"December 14, 1925.

"Dear Doctor:

"In answer to your questionnaire would say in reply to

"1. Sterilization is not employed in this institution, either male or female.

"2. From observation elsewhere, I do not believe the effects are satisfactory.

"3. I do not approve it.

"4. Our census shows 1603 patients, 981 males and 622 females. Of the 981 males, 282 are at Templeton, which leaves the population at Waverley as 1321.

"Very truly yours,

"RANSOM A. GREENE, Superintendent."

A request for data from Chippewa Falls brought the following:

"December 17, 1925.

"Dear Doctor:

"Your letter of December 12, relative to sterilization of mental defectives, is received.

"I am sending you a copy of a paper I read before a Minnesota organization a few years ago. This without doubt will give you the information you asked for. Viewed purely from the standpoint of a physician and disregarding its theological or ethical aspect, I approve of the operation.

"During the year 1924 the operation for sterilization was performed upon 9 males and 11 females. In all, since the passage of the Wisconsin Sterilization Act, the operation has been performed upon 146 inmates.

"Yours very truly,

"A. L. BEIER, Superintendent."

To disregard the theological or ethical aspect of human life is to disregard the nature of man and debase him to the status of a mere animal. It is good stock genetics to castrate or kill the weaker births to prevent a weak element of heredity. We have before proven that man may not be subject to this law. When the claims of Christian ethics and theology are proven, Dr. Beier logically falls into our ranks.

In his paper referred to in his letter he cites an estimate of Dr. Goddard, that there are 300,000 feeble-minded in the United States. About 70,000 are in Institutions.

According to Goddard 65 per cent. of children born of feeble-minded parents are feeble-minded. Dr. V. V. Anderson raises the estimate to 80 per cent. Dr. Beier believes that Anderson is correct or nearly so.

Dr. Beier cogently argues that the feeble-minded are prone to vice, crime, and misery, and become social and economic burdens. They breed faster than the more intelligent, and thus bring in race deterioration.

In his opinion three remedies are offered: (1) Restrictive marriage laws; (2) Sequestration; (3) Asexualization wrought by vasectomy of males; salpingectomy of females.

He quotes Huxley:

"We are sorry for you; we will do our best for you (and in so doing we elevate ourselves, since mercy blesses him that gives and him that takes), but we deny you the right to parenthood. You may live, but you must not propagate."

An example of a restrictive marriage law is the statute of Wisconsin:

"No insane person or idiot shall be capable of contracting marriage. No man and woman, either of whom is insane, mentally imbecile, feeble-minded or epileptic shall intermarry."

This statute is too restrictive. The State is competent to forbid the marriage of the insane and imbecile. Such persons are by the law of nature incapable of contracting marriage. The State thus merely prevents concubinage. Many epileptics are idiots. These are properly subject to the State's restrictive law; but when such law is extended to all feeble-minded and epileptics it o'erleaps itself, and is unenforceable. Most of us are a little "queer."

On the basis of a population of 100,000,000, the able corps of psychologists who examined a large number of men during the World War, found that but 5 per cent. of our population are mentally in the A1 Class.

Control of marriage is not a complete remedy, but a concurrent measure to be used with sequestration. No measure or group of measures shall entirely free society of the burden of the feeble-minded. They are like the poor to be with us always. But a control in accordance with ethical laws may keep the burden within supportable bounds.

Of sequestration or segregation Dr. Beier wisely declares thus:

"Sequestration or segregation, the second means given to promote the elimination of the unfit, if it could be extensively carried out, would be the most effective. Due to economic reasons it would be impossible to house or colonize all mental defectives, and if this could be accomplished it would be a difficult matter to retain them. Segregation contemplates confining males and females during their reproductive period especially. During this time they are at least partially able to pay for their support at employment designed to carry on the work of the institution in which they are housed. Segregation will continue to be by far the most valuable method of treating these individuals as many of the feeble-minded, as we

know, have many traits that make them undesirable and unfavorable units of society."

The economic argument is unconvincing. A nation that spends 80 per cent. of $3,800,000,000 on war should not shrink from its duty to its mental defectives. By proper segregation and enforcement of a reasonable restrictive marriage law the number of defectives would rapidly decrease. Mr. Vasaly declared that the problem would be solved in 30 years.

Dr. Beier's third method is sterilization, first legalized in Indiana in 1907. It has since been made a statute in California, Connecticut, Iowa, New York, New Jersey, Kansas, Nevada, North Dakota, Washington, Wisconsin. The Wisconsin statute passed in 1913 authorizes the "safest and most effective" operation for the prevention of procreation. This is male vasectomy and female salpingectomy.

Dr. Beier was opposed by Mr. Chas. E. Vasaly, Chairman of Minnesota State Board of Control, who offered two most weighty arguments:

1. The sterilized girl is more dangerous as a carrier of venereal disease because men take advantage of the fact that she can have no offspring. She thus also fosters immorality and disease.

2. The procedure is unethical. To allow economics to prevail over ethics is sordid materialism.

Sterilization defeats its own purpose. It is usually performed on persons already segregated. If they be subsequently given freedom they may become morons, corrupters of youth, and carriers of venereal disease. The States which have passed the law are receding from its execution.

"If sterilized defectives are permitted at liberty, it will mean a tremendous increase in immorality and the dissemination of diseases would be offset only by a reduction of offspring." (Dr. Edward Ochsner)

The Eugenists mistake the true values of human life. They wrongly consider health and mortal life the highest human good. Their ideal is the super-beast of Nietzsche.

"The truth is that eugenists, from Sir Francis Galton to Dean Inge, have been carried away by the initial racehorse analogy and borne on to the wrong track. The illustration of breeding for points is not one that is applicable to a being with a spiritual nature." (Thomas J. Gerard)

"The points of a good or bad citizens are really far harder to discern than those of a puppy or a shorthorn calf. I sometimes wonder whether people who talk so freely about extirpating the unfit, ever dispassionately consider their own history. Surely one must be very 'fit' indeed not to know of an occasion, or perhaps two, in one's life when it would have been only too easy to qualify among the unfit." (T. H. Huxley)

"The laws against the marriage of the feeble-minded are unscientific, because they attempt no definition of the class. If feeble-mindedness were always as clearly distinct from normality as polydactylism, then there would be no objection to the law on this score. But this is by no means the case. If we measure the mentality of 10,000 individuals by a quantitive test, such as that of Binet and Simon, then we shall find that the retardation in mental development for one year, two years, three years, etc., shows nowhere a sharp change indicating where the normal ceases and the

abnormal begins. Shall we sterilize or forbid marriage to all children whose mental development is retarded as much as one year? That would include 38 per cent. of all children, and one of yours, Oh, legislator! Shall the limit be two years of retardation? That would include 18 per cent. of the children. Shall the limit be three years? That will be over 8 per cent. —full one-twelfth of the population to be sterile. Is it not reckless to pass such serious legislation in such loose terms?" (Dr. C. B. Davenport)

In the words of Prof. Lester F. Ward the head is the only organ which the Eugenists seek to improve. They are cattle breeders, breeding for points.

It is granted that the State as delegate of God has the right to sterilize as a punishment of a crime committed, but not as a prevention of a possible crime.

Some moralists grant the State the right to sterilize, if it be found necessary for the preservation of the essential welfare of society. This hypothesis is never verified, and will never be verified.

"Furthermore, most of the modern States are exposed to at least no immediate danger from destructive racial elements. Moreover, many States have at their disposal quite other ways and means to meet the peril of racial deterioration. Consequently, legal sterilization is for the present decidedly premature." (Dr. Joseph Mayer, "Die Unfruchtbarmachung Geisteskranker," in *Bonner Zeitung für Theologie nnd Seelsorge,* 1926).

"Vasectomia non est medium necessarium quo societas sui incolumitatem directe protegat et defendat contra nocentes. In hoc præprimis insistunt liceitatis patroni, quatenus timendum velint ne defectivi et abnormes, si servetur eorum fœcundandi potentia, proles generent defectivas et ad crimina proclives, quarum multitudine ipsa societatis existentia in discrimen vocetur. Jamvero non admittimus ex procreatione prolium degenerum ex illis viris periclitari societatis existentiam. Numerus namque huiusmodi virorum et prolium inde nascentium, in Statu aliunde rite moderato, semper manebit relative exiguus, et societatis integritas stare potest cum existentia quorundam membrorum abnormium et degenerum." (Father A. De Smet)

The Central Association for Mental Welfare of London, Eng., from experience derived from the care of 34,000 cases of mental defectives declares that "a general policy of sterilization would be ineffective in prevention; that the freedom accompanying it would be attended with positive harm to the defectives themselves; that it would delay institutional provision for their segregation, which we regard as the only safe remedy; finally, that it would fail to provide any effectual safeguard either for defectives or for the community."

"Saluti spirituali semper potest aliter subvenire quam per membri præcisionem, quia peccatum subjacet voluntati. Et ideo in nullo casu licet membrum præscindere propter quodcunque peccatum vitandum. Unde Chrysostomus exponens illud Matth. 19: 'Sunt eunuchi, qui seipsos castraverunt propter regnum cœlorum,' dicit: Non per membrorum abscissionem, sed malarum cogitationum interemptionem; maledictioni enim est

obnoxius qui membrum abscindit; etenim homicidæ sunt qui talia præsumunt." (St. Thomas, Summa Theol. II, II, 65, 1, 3.)

Normal sexual desire even though very strong is never a just motive of sterilization. But if there be a pathologic erethism having its source in disordered physical condition of the organs, sterilization may be permitted. This condition is so rare that it may be considered a merely academic theme.

"Castrationem tolerare nemo potest ad servandam castitatem vel vincendas tentationes, quia remedium istud non est necessarium ad istum finem et sæpe ineptum. Si vero possit homo simili operatione ab insolita et morbida concupiscentiæ vi liberari, operationem, seclusa alia meliori via, honeste fieri existimaverimus. Quare si vero, per vasectomiam quispiam ad justam temperiem perventurus sit, operationi consentire posse nobis videtur." (Vermeersch)

Dr. A. De Smet of Bruges favors this view. Thus understood Dr. Prümmer's opinion may be allowed. My own personal opinion is strongly against this opinion: it is doubtful that such pathological state uncontrollable by the will exist. There is no evidence that the operation has successfully operated.

That vasectomy renders a man incapable of contracting marriage, is certain and admitted by all. His testicles elaborate semen, but the way of the seed is occluded.

If the man be married at the time of the operation, he has still the right of coitus, but in such case both principals suffer. The wife suffers the usual ills resulting from an onanistic coitus; and the man suffers from the orgasm which is hindered in its exit. There however no moral wrong in the use of lawful marriage.

It is easy to restore the ligated seminiferous tubes, but to restore to function a severed tube is an operation demanding great surgical skill. I have personal knowledge of only one such successful operation. Hence a vasectomized man is considered in canon law to be perpetually incapable of marriage.

Touching the unlawfulness of vasectomy we adduce the following opinion of Ferreres in support of what we have written:

"QUAER. 6. *An haec operatio licita sit ita ut saltem in poenam imponi possit?*

"RESP. *Neg.*, nisi forte causa infirmitatis ad salvandum v. gr. vitam ipsius infirmi. Ratio est, quia talis operatio ex una parte reddit hominem inhabilem ad matrimonium, ut probatum est in quaesito praecedenti, ideoque hic coniicitur in coactum caelibatum, et ex alia talis operatio tentationes contra castitatem non minuit, sed potius auget, eo quod vir ab abundantia seminis, quod pergunt elaborare testiculi, exonerari non possit ullo modo. Unde tales viri coniiciuntur in moralem necessitatem peccandi. Cfr. *Eschbach*, l. c., n. 1. Aliunde privat hominem iure disponendi de proprio corpore in ordine ad generationem, in quo a nemine pendet." (Theol. Moral. II, 1010)

MISCELLANEA

Porro's Operation.—To prevent excessive hemorrhage resulting from incisions of the uterus, Dr. Edward Porro (1842-1902) of Pavia, Italy, in May, 1876, removed the womb of the woman. He had successfully experimented with rabbits, and was thus led to apply this surgery to mankind. He has thus given his name to this operation.

It seems evident that Porro acted in good faith.

"Before the days of antiseptic surgery cesarean delivery was practically always fatal to the mother. Tarnier could not find one successful outcome for the mother in Paris during the nineteenth century up to his

Fig. 160—Tubal pregnancy. Tube laid open. Embryo slightly abnormal. Tubal pregnancies are never normal.

own time, and Spaeth said the same for Vienna up to 1877. In 1877 Porro of Pavia advised the supravaginal amputation of the uterus after the child was delivered to avoid hemorrhage and peritoneal infection. This operation replaced the classic cesarean until 1882, when Sänger invented a suture which would keep the uterine incision shut, and applied antisepsis. Sänger's operation has been improved so much that cesarean delivery,

when performed by skilled obstetricians, has an extremely low mortality in cases which have not been infected. Routh, in 1910, collected the statistics of Great Britain, comprising 1282 cases, which may be taken as a standard for all civilized countries, and he found a steady decrease in the mortality until now it is near 2 per cent. in uninfected cases. The dangers in the operation increase with every hour the woman is in labor, but even then the general mortality is now down to about 8.1 per cent. This, it must be remembered, is the rate when competent men operate.

"When the ordinary practitioner in small cities, towns, and country places operates the mortality is very high. Newell said that in four cities of from 25,000 to 40,000 inhabitants within forty miles of Boston he collected the following data: in A no patient on whom cesarean section had been done is known to have recovered—a mortality of 100 per cent. In B the mortality is from 60 to 70 per cent. In C the operation is invariably fatal when done by local surgeons. In D the fatality is from 10 to 20 per cent. in average cases, but since cesarean section has become popular as a method of treatment for eclampsia the mortality is over 50 per cent. . . . The ordinary practitioner, however, is utterly unfitted to do a cesarean section of any kind. In large cities it is easy to find a trained surgeon to do the operation, but in small towns and in country places there is seldom any one available. The physician who chooses to practice medicine in an isolated place knows that he will almost certainly be called upon to do a cesarean section some day, and he should not take up the responsibility of the general practitioner in such a place until he is competent to do that operation when life depends upon him. This is as things should be; but unfortunately a man who is trained well enough to do major surgery will not live in a small town if he can get into a large city. The physician in any case should be able at least to make the diagnosis in time, before labor sets in, and have the woman sent to the nearest city, if possible." (O'Malley, op. cit.)

Hysterectomy is never lawful save when it is prudently judged the only means to save the woman's life in a present danger. Hence it may not be performed to prevent a probable hemorrhage resulting from Caesarean section. It may not be performed to prevent a foreseen future difficult pregnancy. It may not be performed to sterilize the woman. Even when hysterectomy is licit the ovaries should be saved if possible. The best surgery is always conservative. To perform panhysterectomy simply because it is easier and safer than other surgery is unscientific and unethical: the value of the pelvic organs in the life of woman is a prime consideration.

Birth Control and Cancer.—At London in 1925 Dr. Hastings Gifford declared that the artificial control of motherhood is a prevalent cause of cancer.

Gland Theory.—Some years ago Dr. Voronoff of Paris startled the world by a theory that if the sex glands of a monkey be transplanted into the human organism a certain rejuvenation may be effected.

In 1925 Prof. C. R. Moore of the University of Chicago after experiments on rats and rabbits announces:

"Despite a more or less intensive study of gland transplantation for many years past by biologists all over the world, the conditions underlying the successful incorporation of such tissues removed from one animal to another, or from one place to another in the same animal, have not been well understood. The work involves the separation of a very delicate piece of tissue from its normal environment and its normal blood supply and the transfer of it to another animal or another locality in the same animal. Unless the tissue meets conditions sufficiently favorable to enable it to establish a new blood supply it will very soon die and be removed by the protecting mechanisms of the body, as any foreign body might be transplanted with considerable success for many years, and in many cases retain its normal condition and function, but the male gland of mammals has been found more difficult to work with on account of its very sensitive nature. Until recently it has never been transplanted, even from one place to another in the same mammalian organisms with anything like persistence in its normal conditions. With the knowledge gained from many different lines of investigation during the last seven years, facts have been uncovered and so utilized that I am now able to announce the persistence of portions of the male gland of mammals in a perfectly normal condition."

Dr. Moore's modest announcement does not corroborate Voronoff's preposterous claim.

In the year 1925, there was convened at Washington, D. C., a congress of physicians and surgeons.

Among those who participated in the discussion were Dr. Charles G. Stockard of Cornell Medical school, New York; Dr. Llewellys F. Barker of Baltimore, and Dr. William J. Mayo, president of the congress.

Dr. Mayo referred to Dr. Voronoff, the French surgeon who became famous for his monkey gland transplantations, as one of those who have been humbugging the public with impossible claims.

"In 1919 Dr. Voronoff published the results of 120 of these grafting operations on animals. In these cases, of course, the grafted organ was taken from an animal of the same species as that of the new host. The earlier operations were carried out on gelded goats and rams. In all cases where the graft was successful, and was not too rapidly absorbed, Voronoff claims that the grafted glands performed their endocrine functions, bringing about the development of the secondary sexual characters and the sexual instinct. The same operation was then performed on two senile rams aged about ten years, and it is stated that these animals recovered their vivacity and again succeeded in begetting descendants. He also states that in one of these animals removal of the grafts was followed by a relapse into senility, and that a further operation again brought about rejuvenescence, although more slowly than at first.

"Since then, in 1920 and 1921, Dr. Voronoff has grafted the glands of certain species of monkeys (*Cynocephalus*) into men in a number of cases, and claims somewhat similar results.

"Dr. Voronoff believes he has proved that his method is efficacious in cases of senility due to the loss of the sexual hormones or gonads, and not

resulting from degeneration of other essential organs or tissues. It is evident, therefore, that the value of his operation, if his results are confirmed, depends on the extent to which the phenomena of old age are really brought about by a failure of this internal secretion.

"But in reading his account of seven cases, one is struck by the fact that his evidence of rejuvenation is largely based on subjective symptoms. A man of seventy-four loses much of his obesity and debility and returns, 'his aspect jovial and his movements active.' In the absence of serious organic disease, the very powerful suggestion supplied by the operation leading to new and healthier habits might well account for this change.

"This psychological element cannot be excluded in human experiments as it can be in animals, where, moreover, the implanted glands are taken from individuals of their own species." (Fred E. Wynne)

Voronoff declares that a successfully transplanted gland will take root in the seat of its transplantation and deliver its hormones to the blood stream. However, the transplantation must have place within the same species of animal or the gland must be derived from a closely allied species. Voronoff's claim of the successful transplantation of monkey glands into men is not proven. It seems to the author to be impossible. But even if we grant the possibility of such transplantation, it remains scientifically true that the transplanted gland is a foreign body. Even granting its functions, they must be temporary, for its host will absorb its substance. This absorption will not specifically strengthen the absorbing system.

Of the gonads Dr. Stockard declared:

"They do not prolong youth. Their disappearance with advancing age is just a sign, as is gray hair. You might just as well expect to prolong youth by grafting black hair as by the reintroduction of these glands."

In December of 1927 Dr. Hoffmeister, first assistant to Prof. Erich Lexer, Chief of the Hospital of the University of Freiburg, Germany, after a profound investigation, under the auspices of German scientific circles, declared that a number of gland transplantations from monkeys to man and other animals were carried out during the investigation. Several weeks after the operations, it was stated, the glands were found by the naked eye or microscopically either to have been absorbed by the tissues or to have been atrophied beyond their power of function.

Dr. Hoffmeister said that in some cases a temporary apparent rejuvenation followed the operation, but this was followed by a reaction in the form of rapid decay or the complete cessation of all vitality.

Dr. Barker said the public should be warned against the great number of glandular extracts on the market and the extravagant claims that are being made for them. He said most of them are harmless, provided they do not contain too much thyroid extract.

Of the same category is the Viennese Surgeon Steinach's claim to rejuvenate by ligation of the vasa deferentia.

Somewhat akin to gland transplantation is the operation of ovarian implantation and transplantation.

It is called autotransplantation if the ovary of the same woman is transplanted.

It is heterotransplantation if the ovary be taken from one woman and implanted in another.

Numerous instances are on record of operations on rabbits, in which pregnancy followed both operations. The heritable qualities are transplanted by the ingrafted ovary.

"A few cases of impregnation following transplantation in human beings have been reported. The most famous one is that of Morris. Morris' case was one of pelvic peritonitis, in which both adnexa were removed and a piece of ovary implanted in the end of one tube. This patient aborted four months after the operation and then menstruated for four years.

"Frank in 1898 reported 3 cases of autotransplantation of the ovary, in one of which pregnancy going to full term took place. In another, probable abortion occurred, and in a third case: A patient had amenorrhea following a miscarriage, with symptoms of change of life. An operation was performed and the ovaries, which showed small cystic degeneration, were removed and an ovary from another woman was implanted. Menstruation appeared four months later, and four years after conception took place, with normal birth.

"We have had one case similar to that reported by Morris, in which abortion probably took place several months after operation. The case was reported as abortion by her family physician, but as the products of conception were not seen it cannot be regarded as absolutely proved. Franklin H. Martin and Malcolm Storer have reported similar cases." (Graves)

In 1927 Dr. Anthony John Capper Magian, famed Manchester, Eng., gynecologist, declared that during the past ten years he had transplanted ovaries from healthy women to 100 apparently sterile women, and that many of the repaired patients had subsequently borne children.

Until a year ago there were only three cures of female sterility in the history of medicine which could be definitely attributed to the transplanting of glands. Many a United States doctor doubted Dr. Magian. However, he is a solid authority—senior honorary surgeon to St. Margaret's Hospital for Women at Manchester, and honorary surgeon and gynecologist to the Manchester French Hospital. Among his many books on his specialty is *Sterility in Women.* He warned that not enough time has elapsed since his operations to prove that the results were permanent.

The operation is relatively simple.

Autotransplantation is not unethical, provided it be done to promote the lawful functions of the woman.

It is difficult to conceive a case wherein heterotransplantation of an ovary would be lawful. The transplanted ovary must be alive and healthy. The ethical law forbids the removal of such an ovary from a living woman. The ovary from another species of animal will not function. It would be against the natural law to attempt it.

"To the gynecologist ovarian transplantation has been a subject of peculiar interest, in that it seemed to promise a solution of many difficult

pelvic problems. Practical results have, however, up to the present time been disappointing, but it is quite possible that with improved technic and with a greater knowledge of the physiology of the ovarian functions some of the hopes for its usefulness may in time be realized.

"In the treatment of sterility ovarian transplantation in the human female has been especially disappointing. A number of successful operations in animals of heteroplastic transplantation has been reported, as in the following experiment cited by Martin:

"'W. E. Castle and John C. Phillips reported in *Science,* 1909, that ovaries were removed from an albino guinea-pig about five months old, and in their stead were introduced the ovaries of a black guinea-pig about one month old. The albino upon which the operation had been performed was then placed with an albino male guinea-pig and six months later bore two black-pigmented young. In many hundreds of matings of albino guinea-pigs observed by the authors only albino young were produced; so there seems no room for doubt that in the case described the black-pigmented young derived their color from the black animal that furnished the ovaries.'

"A similar result in the human female was reported by Halliday-Crom in 1905, who claimed to have brought about pregnancy and a full term child by engrafting in the uterus of a castrated woman ovarian tissue from another woman. Morris reported a similar case in 1906. Numerous reports of pregnancy following autoplastic grafting of ovarian tissue in the uterine horns after complete bilateral salpingectomy have appeared in the journals. In most of these cases there has been a history of abortion. Most of them, like that of the author, lack irrefutable evidence. We have performed this operation many times without success as regards the maintaining of fertility.

"Ovarian transplantation has been used in the treatment of women who have by surgical operation suffered the loss of their ovaries, but with the retention of the uterus. The operation of double oöphorectomy without removal of the uterus is to be deplored, in that it is usually followed by discomforting pelvic and vasomotor symptoms, often of extreme severity and long duration. Several such cases have been reported in which transplantation of ovarian tissue from another woman has been done followed by temporary reappearance of menstruation and remission of ablation symptoms. The results of such an operation are extremely inconstant, owing to the difficulty of successful grafting in homoplastic transplantation.

"It was stated above that in unmatured animals normal development of the other genitalia follows castration if the ovarian tissue be transplanted in some part of the animal's body. In a similar manner, after castration of the adult human female, genital atrophy may, for a time at least, be prevented and the menses continued if ovarian tissue is reimplanted. Such a result ensues only if the uterus is left *in situ.* Menstruation in these cases is re-established usually after three or four months following the operation. A like result may be obtained less constantly by transplanta-

tion of ovarian tissue from another woman. Here again the procedure of grafting has only a limited field of usefulness, for it does not ultimately do away with the disadvantages of removing both ovaries and leaving the uterus. It may be said also that ovaries that are so diseased as to require removal from the pelvis are not usually suitable for implantation in some other part of the body.

"The most promising field for ovarian transplantation would seem to be in cases where hysterectomy with removal of non-diseased ovaries is required, in which it might be expected that the engrafted organ would supply an internal secretion sufficient to prevent ablation symptoms of hot flushes and other vasomotor disturbances. The operation has been performed many times by different surgeons whose opinions as to its efficacy vary considerably. Some believe that ablation symptoms are definitely and favorably influenced by the transplanted ovary; others have found it of little benefit. We have carried out the procedure in many cases and have carefully followed up and tabulated the results. In our series of cases as compared with hysterectomy cases with total ablation of the ovaries we have found practically no difference in the incidence or intensity of the surgical menopause symptoms. It was our custom in the earlier operations to transplant ovarian tissue after hystero-oöphorectomy in the leaves of the broad ligament. In this situation the ovarian graft in several cases became cystic and painful, and in one instance apparently produced distressing molimina with vicarious epistaxis. In the later operations the graft was inserted in a pocket made between the abdominal rectus muscle and its aponeurosis. In a few instances the section of gland became more or less periodically enlarged and tender, due undoubtedly to cystic degeneration of the follicles. In one case the gland grew rapidly to nearly the size of a fist and then suddenly collapsed. Some recommend planting the ovary in the subcutaneous fat. In a case in which this method had been used and which later came under our observation the ovarian tissue became extensively cystic, spreading through the fat and requiring several operations for its complete removal.

"From the foregoing experiences our conclusion has been that the operation of transplantation after hystero-oöphorectomy is of little or no practical value. When the graft has been made in some easily accessible place the operation cannot be followed by any serious harm, and in certain cases, chiefly for sentimental reasons, it may be advisable.

"Our observations regarding the feasibility of ovarian transplantation after hysterectomy are substantiated by Tuffier, who remarks that 'where the uterus is absent ovarian transplantation is of no value.'

"There is a possible field for ovarian transplantation in the treatment of the functional amenorrheas of young women. So far as we can discover there has been practically no work done along this line. The following experiment, performed by the author, is presented not as conclusive proof of the value of the procedure, but as an interesting suggestion that a remedy may be found for a difficult gynecologic problem:

"Two amenorrheic women came to the hospital at the same time. One of them, twenty-six years of age, had menstruated only a few times in her life. She had been married five years without children. She was perfectly developed both as to her primary and secondary sexual characters. The second was a young woman of twenty-one who had menstruated only two or three times in her life, the last time four months previous to her coming to the hospital. It happened that there was at the hospital at the same time a woman who had had menorrhagia and metrorrhagia for five years as a result of uterine insufficiency. Repeated curetings had been of no benefit. The uterus was anatomically normal. The Wassermann test was negative. Inasmuch as a hysterectomy seemed advisable, it was determined to graft ovarian tissue from the menorrheic woman into the two amenorrheic patients. Accordingly, during the hysterectomy on the last named patient, sections were taken from the ovary in which there was no corpus luteum. These sections were immediately transplanted into the anterior cervical lip of the amenorrheic patients. The first patient a few days after the operation had a perfectly normal menstruation for the first time in three years. The second patient menstruated normally in about twelve days and has menstruated regularly since for about five months.

"In these two cases the action of the ovarian internal secretion was apparently exerted by a portion of ovarian tissue from which the influence of the corpus luteum was excluded." (Graves: Gynecology)

A case might offer itself wherein an ovary might be removed from a woman instantly accidentally killed. There is no record that such transplantation has ever been done.

Impotency and Sterility.—A male incapable of performing the act of coitus aptus ad generationem is incapable of contracting a valid marriage. This may be psychic, relative or absolute. Absence of the genital organs, or such malformation of them, or deficiency of energy in them that they function not as aforesaid constitutes a diriment impediment of marriage. Infecundity of the male semen is often the cause of barren marriages, but it is not an impediment of marriage.

The woman is incapable of contracting a valid marriage when she is incapable of receiving a copula apta ad generationem. This also may be psychic, relative or absolute.

The Third Paragraph of Canon 1068 of The Code of Canon Law declares:

"Sterilitas matrimonium nec dirimit nec impedit." This clear canon decides the issue against a school of wilful so-called theologians who fail to understand that the great ordinance of marriage comprises many ends within its purview.

As for generation, the non-functioning womb and ovaries of the woman, after the menopause, are inert. If their opinion were followed, no woman could contract a valid marriage after the menopause.

The canon is in line with previous decisions of the Holy Office.

In the year 1887 the Holy Office was asked to give judgment:

"Whether a woman who has undergone double oöphorectomy may validly and lawfully contract marriage."

The Holy Office answered:

"The matter has been long and seriously weighed: the marriage of the aforesaid woman is not to be hindered."

The same decision was rendered to the Archbishop of Quebec in 1890.

Those who endeavor to overthrow this certain opinion seem to be ignorant of the essential difference between impotence and sterility.

Impotence is a physical incapacity for sexual intercourse. It is a diriment impediment.

Barrenness or sterility in the female is a deficiency of reproductive energy resulting in an inability to conceive. This may arise from a surgical operation. No matter what its cause may be, provided there be a capacity for sexual intercourse, it invalidates not, nor renders unlawful marriage.

"By sterility in women we understand the pathological state in which a woman who is sexually mature fails to conceive, notwithstanding frequently repeated, normal sexual intercourse throughout a considerable period of time.

"Sterility is termed *congenital* (or *absolute*) when, notwithstanding repeated intercourse throughout a long period (not less than three years), pregnancy has always failed to ensue; it is termed *acquired* (or *relative*), when women who have already been pregnant once or more often, cease to conceive, although they are still quite young enough to do so, and have experienced regular sexual intercourse for a long period (not less than three years). In a wider sense of the term, we say that a woman is sterile, when, notwithstanding prolonged and repeated sexual intercourse, in circumstances favorable to procreation, she has failed to give birth to a living and viable infant.

"English authors also make a special distinction regarding that form of acquired sterility (which is no great rarity), in which a woman gives birth to a single infant and subsequently remains sterile (*'only-one-child sterility'*).

"The civilization of the present day, with its shady side, has made it necessary for us to pay an increasing attention to *facultative sterility*, dependent upon the use during intercourse of means for the prevention of conception; and very recently the surgical tendency of modern gynecology has brought into being a new variety of sterility in women, viz., operative sterility.

"The period which must elapse after marriage, before the absence of pregnancy must lead us to regard a woman as sterile, is fixed as three years.

"The ideal state of fertility, that in which conception is the immediate result of the first act of intercourse between husband and wife, the conception being followed in due course by the birth of a child, is, like most other ideals, one very rarely attained. In the human species, conception as the immediate result of the first act of sexual intercourse, is an extremely unusual occurrence. To invoke medical assistance for women who have failed to conceive during the first three months of married life, which my experience shows to be more frequently done now than formerly, is devoid of all justification; and still worse is it, in this period of

'early love' to subject women, as has often been done recently by over-energetic gynecologists, to local treatment, even to the extent of operative procedures.

"We are not justified in speaking of the existence of actual sterility until three years of marital intercourse have failed to result in conception; still, when the commencement of the first pregnancy is delayed for more than sixteen months after marriage, there is considerable probability that the woman is sterile; and this probability increases month by month till the expiry of the second year, whilst as the end of the third year approaches, it becomes tantamount to certainty.

"Sterility is one of the commonest of the functional disorders of women, and one of those which most often demand gynecological assistance.

"By a statistical study of the marriages of the royal and princely families of Europe and of the marriages of the highest families of the aristocracy, I learned that of 626 marriages, 70 were barren; thus the ratio of fruitless to fruitful marriages proved to be as 1 : 8.87. But in other circles of society, in so far as data relating to the matter were obtainable in my practice, the statistics of infertility were by no means so unfavorable, the ratio working out at about 1 barren to 10 fruitful unions. I must point out, however, that these statistics, like all statistics of fertility, are to a degree invalidated by the fact that in a certain number of the instances included among the barren, an unnoticed abortion may have occurred.

"Simpson, in his investigation regarding the frequency of sterile unions, found a ratio of 1 : 8.5 (in 1,252 instances). In the English aristocracy, where the marriages are for the most part restricted among the members of a comparatively small number of families, the ratio was 1 : 6.11 (495 instances); on the other hand, among the population of Grangemouth and Bathgate, consisting chiefly of persons engaged in seafaring and agricultural occupations, the ratio of barren to fruitful unions was 1 : 10.5.

"Spencer Wells and Marion Sims, as a result of their investigations, give a ratio of 1 : 8.

"According to Sceligmann, in Hamburg, among marriages of persons in all classes of society, 11.5 per cent. are barren. Prochownick found among 2,500 women, all of whom had been married for eighteen months or more, and none of whom were more than 40 years of age, that 9 per cent. had failed to conceive.

"According to Frank and Burdach, who do not publish the figures upon which their estimate is based, only 1 marriage in 50 proves barren. Lever, who also gives merely his percentage result, states that 5 per cent. of married women are completely infertile. Hedin, dealing with a Swedish community of 800 persons, states that the percentage of sterile unions is barely 10." (Kisch, op. cit.)

"Only-child-sterility is observed chiefly after difficult deliveries, followed by long enduring inflammatory processes of the uterus and the uterine adnexa, which seriously affect the woman's reproductive capacity. It occurs especially in delicately organized, anaemic, scrofulous women,

whose powers of resistance have been undermined by a single pregnancy and parturition. Finally, it is met with in women suffering from myoma uteri, a form of tumor which beyond others renders the recurrence of pregnancy difficult and unlikely. This form of sterility has been seen also in cases in which comparatively soon after the birth of her first child, the mother has suffered from typhoid, scarlatina, or some severe infective fever, which appears in some way to interfere for the future with the development of normal ova." (Kisch, op. cit.)

Artificial Impregnation.—

"At the present day very little is heard of artificial impregnation in the human race, the practice having fallen into a certain amount of disrepute as a result of religious, social, and even legal objections. There is no doubt, however, that the great success that has been attained in recent years in the artificial impregnation of domestic animals will lead eventually to a more extended trial of its possibilities in the treatment of sterility in woman. Artificial fertilization of fishes was done successfully as early as the year 1700, and has been developed scientifically since the middle of the last century, so that at present it is an extremely important factor in the industry of pisciculture. In the year 1780, Spallanzani succeeded in artificially fertilizing a bitch, and was the first to impregnate thus an animal of the mammalian type. This experiment of Spallanzani attracted much attention at the time, but very little was done in animal fertilization for more than a century. In recent times the procedure has again been taken up, and has been put to very practical use in the breeding of domestic animals. Everest Millais reported 15 successful results out of 19 trials in fertilizing bitches, and showed that these results equaled those of natural methods. Elias Iwanoff, a Russian, worked on the artificial breeding of horses, and in 1907 reported that the results were even more successful than by natural breeding. He succeeded in fertilizing mares that had previously been sterile. His experiments with cattle, sheep, and other domestic animals produced a like result. Since then the process has been widely adopted by breeders of animals.

"To Marion Sims belongs the credit of being the first to fertilize a woman artificially, which he did in 1866. The operation, however, has been little practised, and only a comparatively few cases have been reported. Rohleder, in his monograph, collects all the cases from the literature, including his own, and, making allowances for several doubtful instances, reports 65 cases with 21 successful results. Döderlein has reported another case. The subject has been exhaustively treated by Rohleder in an appendix to his book entitled 'Die Zeugung beim Menschen,' to which the reader is referred for a detailed description of the operation. The technic is extremely simple, and by the method suggested by Rohleder there seems little danger of sepsis if proper precautions are taken. By this method the semen is injected into the cervical canal after a slight dilatation.

"By the technic used by Sims the few drops necessary for injection were collected from the posterior vault of the vagina post coitum. Rohleder criticizes this method, because the spermatozoa are deposited and

left for a time in the acid secretion of the vagina, which is inimical to their life. He, therefore, takes the semen from a condom and injects it immediately into the cervix. The operation is done during the first few days after menstruation and immediately post coitum. This last he considers important, as at that time the alkaline secretion of the cervix is more profuse, and hence more favorable to the life of the spermatozoön. It is of very great importance to exclude the possibility of a gonococcus infection by a careful examination of the genitalia of both husband and wife. More than one operation has resulted in gonorrhea.

"It is evident that artificial impregnation is only indicated when the genitalia of the woman are practically normal except for slight deviations, such as anteflexion of the cervix." (Graves)

In the year 1897 the Holy Office condemned artificial impregnation.

The Holy Office contemplated the case wherein the man seminated outside of the vagina of the woman, and then injected the seed into the genital canal in the manner approved by Rohleder. Wilfully to ejaculate semen outside of lawful coitus is essentially evil.

If by a proper coitus the semen be deposited within the vagina of the woman, per se, there would be nothing unethical in the act of a physician who injects aforesaid semen farther into the vagina or womb. Thus a physician might act with his own wife. The innate feeling of shame forbids such ministration by a third person. It is difficult mentally to conceive a case in which artificial impregnation would be lawful. In cases wherein are verified the conditions which make it lawful, it is not necessary.

Cooperation in Onanism.—This question is usually treated as it touches the woman. She is usually the victim of the unnatural practice. It is sometimes verified that men are moved to commit the crime through the unfitness or unwillingness of the wife to bear children. This is never lawful and there can not be an extenuating circumstance in such case which renders material co-operation lawful. The male is the active agent, the head of the woman. If he withdraws he is guilty.

In the case of the woman, all ethical teachers hold that she may lawfully co-operate in the onanistic coitus, provided it be natural up to the point of withdrawal, and provided she has done her best to move her husband to observe the laws of nature.

In case of an onanistic coitus through use of the condom or sheath the author believes that the woman should never co-operate even in face of death. The entire act is an outrage of nature, *intrinsically* wrong.

Nevertheless competent theological opinion permits merely material co-operation in this second mode of onanism *ex metu gravissimi mali*, provided the woman at no time wilfully consents to venereal pleasure thence arising. The theologians demand positive resistance of the woman throughout the act. The arguments to permit the abomination are very weak, but by the laws of probabilism their opinion tempers the law.

Noldin believes that to prevent greater evils a wife is sometimes bound to render the marriage due to an onanistic husband, provided the act be natural up to the point of withdrawal. The author is not of this

opinion. There is no law that can compel a person even materially to cooperate in a sinful act. Even though this mode of onanistic act be physiologically natural up to withdrawal its whole course is sinful in the onanist's intent. It is better to advise all women absolutely to refuse these brutal husbands, and thus compel men to respect the laws of nature.

Lotiones post coitum.—To bathe the vulva has no effect on conception, and is permitted at any time.

A vaginal douche post coitum can hardly be imagined without a sinful intent. Physiologically a uterine douche may injure the life process during twenty hours after coitus. A douche which floods the womb is more prejudicial to the spermatozoa than a mere vaginal lotion. Moll and Prentiss-Arey believe that impregnation takes place about one day after coitus. As the point where impregnation usually takes place is the outer portion of the Fallopian tube we may assign a few hours for the spermatozoa to travel out from the womb. Thus we should judge that a uterine douche be unlawful within twenty hours after coitus. Here again the opinions of the theologians favor the woman: in practice we may not reject them. Arregui permits uterine douches twelve hours after coitus; vaginal douches four hours after coitus. This is also the opinion of Bucceroni. Vermeersch allows a vaginal lotion one hour post coitum. (Moral Theol. Vol. IV, 71)

From a physiological point of view this seems erroneous, but the eminence of the author prevents its condemnation in practice.

Prostitution.—We accept Abraham Flexner's definition of prostitution: "More or less promiscuity of sex relationship for pay, or its equivalent". It is an age-long plague. The efforts that Christian civilization has made to suppress it have not been consistent, nor effective. Legalized regulation and segregation have been extensively tried in Europe. St. Augustine is quoted in support of such social action:

"Aufer meretrices de rebus humanis, turbaveris omnia libidinibus." (De Ord. Lib. II, 4, 7)

St. Thomas (II. II. X, 11) endorses Augustine's view. The inherent weakness of the aforesaid opinion revealed itself to theologians. Today the best theologians, physicians, and rulers repudiate it.

In the year 1914 Abraham Flexner published an able brochure, "The Regulation of Prostitution in Europe." From his able presentation we gather the following facts:

1. Prostitution at one time was legalized throughout almost the whole of Europe.
2. Regulated prostitution is not vigorous now in any country.
3. Only in Hamburg and Budapest do the municipal authorities unanimously cling to it.
4. Regulated prostitution has died out in many countries: it is moribund in others.
5. Regulation of prostitution has failed.

"If I may, for the sake of brevity, characterize regulation in general terms, I should say that essentially and generally in regulated communities the prostitute applies to the police for permission to carry on her

trade; her name and abode are registered; she agrees to live in a particular place; to avoid certain localities; to avoid certain associations; to refrain from certain acts; and to appear at regular intervals for medical examination. These rules aim to secure chiefly two objects; the preservation of public order and the promotion of public health. Prostitution is a menace to both things—a menace to public order, since the prostitute, if unrestrained, will offend against decency, and will make common cause either with outright criminals, or with other hardly less odious social parasites and vultures; a menace to public health, because venereal disease is the sure concomitant of all promiscuous sexual intercourse. Unrestrained prostitution means therefore disorder and the diffusion of venereal disease. If, now, regulation hopes effectively to grapple with prostitution on either of or both these grounds, if regulation hopes to preserve public decency or to promote public health, it is obviously necessary that all, or at any rate most, prostitutes should be regulated. On the face of the matter, it is clear that, if a minority only are inscribed, the policy cannot be said to control or materially to affect the situation, from either the standpoint of health or the standpoint of order. As a matter of fact, no regulated city inscribes prositutes enough to control the local situation. There are from 50,000 to 60,000 prostitutes in Paris: only 6000 are regulated; there are 20,000 to 30,000 in Berlin: 3300 are registered; there are 300 in Brussels: 182 are registered. In most cities the number of inscribed women is so small that the system is the merest farce: Havre registers 136, Munich 173, Stuttgart 22, Augsburg 6, Bremen 75, Rome 225, Geneva 86; and in general these totals are everywhere decreasing, despite the steady increase in the size of the cities themselves. When you are told that prostitution is registered in Europe, you may reply that nowhere is more than an unimportant fraction registered, and that the bulk of it is everywhere handled without regulation, even in communities in which regulation is said to exist."

6. No government of Europe has been able to catalog the professional prostitutes.

7. Regulation of prostitution is absolutely inconsistent with health, order, and decency.

The legalization of the woman's civil status enables her to solicit. It enables unlicensed prostitutes to solicit: the police can not distinguish one from the other. The legalization enfeebles the innate horror which men should feel for promiscuous sexual intercourse. Man will more readily adopt the foul code of Luther and Freud and infer that individually that is necessary for him which the State finds necessary for the common good.

8. Regulation of prostitution corrupts the police.

9. It is impossible to segregate the brothels. It has never been effectively done. The segregated district is only a centre, whence issue forth panders and prostitutes to prey on society. The existence of such districts is a constant temptation to men thither to betake themselves.

10. Segregation, even if possible, would be undesirable. Crime is most dangerous when it congregates in nests. A legalized segregated district would be like the Gypsies' Court of Miracles.

11. Medical inspection of prostitutes is not efficient. The great clinics of Paris, Berlin and Vienna have not controlled venereal disease. Only a small fraction of the prostitutes are examined. No adequate means are at hand to care for and control the diseased prostitutes. No physician of rank in Europe believes that medical inspection is or has been effective.

At a Social Purity Congress held in Stockholm, Crispi, the first Prime Minister of United Italy, declared:

"I abolished regulated prostitution, which is the well-spring of moral and physical ruin, in consequence of a lengthily matured persuasion, corroborated by the long experience and observation of enlightened minds. In my opinion, the license system is an organization of lust."

The whole Congress was opposed to prostitution.

Dr. Wernich says:

"Brothels stimulate the curiosity of children and of the young of both sexes in a way dangerous to their morality."

Prof. Pelmann of Bonn:

"The wide prevalence of syphilis is due to prostitution. Do away with it, and the disease will be eradicated. Thus a greater service would be rendered to humanity than by extirpating cholera, as the ravages of syphilis are more extensive and more lasting, more dreadful in their consequences, and a greater menace to individuals and to the masses."

After a fight of seventeen years the brothel system was, in 1886, abolished in England.

From these grave social evils of legalized prostitution by easy inference one may judge its spiritual ravages.

The only alternative therefore is to treat prostitution as a crime and punish it as such. It cannot be entirely suppressed, but it may be prevented from attacking society in the name of a right conferred by law. It may by proper enforcement of law be greatly reduced. Since it cannot be entirely eliminated there should be in all large cities free clinics for the cure of venereal disease.

Patent Medicines.—These are not to be confounded with lawful proprietary medicines, such as insulin, adrenalin, narcophin, Straub's Scopolamin Haltbar, etc.

A specimen of what we mean by patent medicines are the much advertised Beecham's Pills. The British Medical Association analyzed these, and found them to consist of ginger, soap, and aloes. Dr. Hague's "Hygienic Mother" gives a searching analysis of several of the most advertised of these vile impostures. The chief ingredient in most of them is alcohol. Opium and morphine are usual. Some of them contain no medicinal agent.

Closely allied to these patent medicines are emmenagogues and ecbolics. The emmenagogue is supposed to stimulate ovarian activity: the ecbolic accelerates parturition and arrests puerperal hemorrhage.

Now in lawful medical practice an emmenagogue has place. There are conditions of ovarian atony, in which the use of a specific stimulant is indicated. One of the best is ovarian extract.

The powerful ecbolic ergot of rye has a lawful place in Medical practice. Apiol, rue, and oil of tansy are emmenagogues. Great care is demanded in the use of these, as they are powerful poisons. The evil in their use lies in the fact that often they are used as abortifacients.

Though, as aforesaid, there is no known drug which will directly expel a fertilized ovum, these powerful agents may so poison the woman that her resulting state may cause an abortion. By using them, therefore, the woman makes a direct attack upon two lives; she acts unreasonably; and always commits a deadly sin. Her sin is of the same nature, if she takes any drug with the sinful intent to expel a fertilized ovum.

Alcohol.—The protest that medical science makes against alcoholic intemperance is at times exaggerated. No condemnation is too severe of the poisonous product now made by the widespread illicit stills. This product often is not a distillation of corn or grain but a vile mixture of poisonous drugs. Even the distilled product, unless double-distilled, is charged with amyl alcohol, commonly called fusel oil.

This is a poison.

But pure whiskey or brandy has its lawful uses in medicine and in social life.

The evil lies in the abuse.

I have seen good effects of whiskey administered as a cardiac stimulant and in cases of dysmenorrhea.

"The one fact that hits back at the legislation [on alcohol] is the fundamental physiological law, as demonstrated by physiological chemistry, that alcohol is a normal constituent of the brain tissue. When this supply runs low there is a natural demand for alcohol as such." (Dr. Charles Alfred Lee Reed, University of Cincinnati professor emeritus of gynecology and onetime (1900-1901) president of the American Medical Association)

Causes of Death.—The United States Public Health reports which tabulate the principal causes of death for 1924 show that 1,173,990 people died within the Registration Area, this area comprising 88.4 per cent. of the estimated population of the country. The total death rate was 11.9 per 1,000 population.

	Number of deaths in 1924	Rate in 1924	Place as cause of death in 1924	Rate in 1923	Place as cause of death in 1923
Diseases of the heart	176.671	178.4	1	175.3	1
Pneumonia (all forms)	97.403	98.4	2	109.0	2
Cerebral hemorrhage and softening	91.941	92.8	3	90.4	4
Cancer and other malignant tumors	91.138	92.0	4	89.4	6
Tuberculosis (all forms)	89.724	90.6	5	93.6	3
Nephritis	88.863	89.7	6	90.1	5

In cases of heart disease and pneumonia the patient should receive prompt and watchful spiritual care. Anoint them early.

Mortality statistics for 1925 compiled by the United States Census Bureau show that the death rate per 100,000 population for heart disease increased from 178 to 185.5 for the year. This disease is by far the most common cause of death, and has become a greater hazard than cancer and tuberculosis combined. In 1900 the death rate from heart disease was 112.2 per 100,000. By 1910 the rate had increased to 141.5. In 1918 the rate exceeded 150, and since 1920, when it made a sharp drop after the war-time epidemics had taken their toll of the physically unsound, there has been a nearly constant rise to the unprecedented figure of 185.5.

Skiagraphy.—Obstetrical science is about to be aided by skiagraphy. A series of experiments conducted at the Michael Reese Hospital at Chicago, Ills., by Dr. Irving Stein and Dr. Robert Arens gives promise that by means of the X-rays a better diagnosis of the course of pregnancy shall be possible. It may be possible to determine multiple pregnancies, and also to determine whether the Caesarean operation shall be necessary.

Hitherto skiagraphy was dangerous to both mother and child. The aforesaid physicians have eliminated much of the danger.

Microbes.—By the researches of Villemin and Koch it is proven that the virus of the contagious disease Tuberculosis is transmitted from man to man and from animals to man and vice versa by the sputum and other discharges. A tuberculous patient should not have the care of animals.

Since the days of the great Pasteur and through his discoveries, aided by those who applied his science to wider fields, science has been able to control diseases and to set up antiseptic surgery.

There are many genera of microbes. Some of them are so small that they pass through the pores of a fine porcelain sieve.

Some microbes are animals; others are plants. The plant microbes are called bacteria. They have no leaves, stems, roots, but are single cells, with a cell wall and protoplasm within. From their rod-like form they are called *bacteria, little sticks.* It is estimated that 400,000,000 could be packed in a grain of granulated sugar.

By growth and splitting the cells multiply: a billion from one bacterium may be produced in ten hours.

They are practically ubiquitous, but most of them are harmless; in fact, many are useful. Most bacteria thrive in lifeless organic substances: they are a great factor in making the soil fertile.

The dangerous microbe invades the body of the living organism and lives at the expense thereof.

The microbe which thrives in a living body will usually soon die if removed from the body, unless transferred to another culture medium. Typhoid germs removed from a human body in four weeks all died in a portion of water.

Objects which have been used by a sick person should not be immediately used by another person. Air them, and give the microbes time to die.

A well person may be a "carrier" of microbes. He himself is immune, but may carry and transmit dangerous microbes.

"Typhoid Mary", a cook, between 1902 and 1907, employed in six different families infected every family with typhoid fever, 26 cases in all. In 1915 she was employed in the Sloan Hospital in New York, and an outbreak of 25 cases of typhoid fever there was most probably attributed to her.

In 1864 a farmer in Wisconsin fell ill of typhoid fever. He recovered and moved to Camden, N. Y., and engaged in the distribution of milk. Camden at once suffered from typhoid fever. In 1900 some of his milk was sent to New York City and caused an epidemic of 380 cases of typhoid fever. The Board of Health of New York found him to be a typhoid fever "carrier".

The prevention of disease must be by the control of living microbes. Microbes are transferred by bodily contact of patients, by contact with discharges, by mediate contact through articles used, by insects which carry the virus, and by breath. Human excreta are a fruitful source of transmission.

Among the measures for the control of communicable diseases may be mentioned the proper disposal of sewage, the purification of water supplies, the care of milk, the care and supervision of food, the destruction of flies and other pernicious insects, and personal hygiene.

The vaccine treatment seems to be scientifically approved. The process is simply to prepare attenuated or weakened viruses, thus robbing them of their power to work serious harm, and inoculate them into a living body, thus stimulating the body to react against the mild invader. This reaction develops an immunity against an attack of the disease. This immunity remains for a long time, but grows less potent after about seven years.

In general vaccines are used for the prevention rather than the cure of disease, but some are given after the disease has set in, on the theory that the immunization may work faster than the infection. This is true of the serum for rabies and for diphtheria in its early onset.

A table of some of the more common poisons, their symptoms, their antidotes, and treatment:

DRUG	GENERAL SYMPTOMS	ANTIDOTE AND TREATMENT
Acid, Carbolic *(Creosote)*	Violent Vomiting and Diarrhœa; Pain over entire Abdomen; violent Sweat; labored Breathing; imperceptible Pulse.	Epsom Salts; hot application to Skin; Massage of the Abdomen; Strychnin; Digitalis.
Prussic Acid *(Hydrocyanic Acid)*	Difficult Breathing; slow cardiac Action; mental Disturbance; Dilation of Pupils of Eyes; Vomiting; sexual Excitement; involuntary Urination and Defecation; general Collapse.	No known antidote; general Stimulation; Ammonia; artificial Respiration; alternate hot and cold Douches.

DRUG	GENERAL SYMPTOMS	ANTIDOTE AND TREATMENT
Nitric Acid	Violent Vomiting; the Stomach and Intestines are inflamed; Gastro-enteritis.	Magnesia, Chalk, Soap, Lime.
Sulphuric Acid	Pain in Mouth, Throat and Epigastrium; violent Vomiting; general Collapse.	Magnesia, Lime, Chalk, Soap, Oils, Opium, external Heat.
Alcohol	General Relaxation; Stupor; Coma; rapid weak Pulse; pallid Face; stertorous Breathing.	Evacuate the Stomach by Emetics or Stomach Pump; external Heat; Coffee; if possible a hypodermic of Strychnin.
Ammonia	Gastro-enteritis indicated by Pain and Heat in the intestinal Canal; Diarrhœa; Convulsions.	Vinegar, Lemon Juice, vegetable Oils.
Belladonna *(Atropin)*	Dryness of Mouth and Throat; accelerated cardiac Action; flushing of Face; rapid Breathing; dilated Pupils; Delirium; Retention of Urine; cold Extremities; then Stupor and Paralysis.	Evacuate the Stomach; use the Catheter; Tannic Acid; Pilocarpin; Physostigma; Caffein; artificial Respiration; external Heat.
Arsenic	Colic; Sense of Burning in Esophagus and Stomach; violent Vomiting and Burning; rapid feeble Pulse; labored Breathing; Thirst; Suppression of Urine; Cramps; Convulsions; Coma; cold Extremities.	Run to the Druggist and get proper Doses of hydrated sesquioxid of Iron. Give Olive Oil or in defect thereof other vegetable Oils; Castor Oil; external Heat; large Draughts of Water.
Carbon Dioxid, or Monoxid, or Illuminating Gas	Vertigo; Blueness of Skin; Headache; Sleepiness; Coma.	Artificial Respiration in open air; Oxygen; Counter-irritation; Electricity.
Cantharides *(Spanish Flies)*	Gastro-enteritis; internal burning Sensation with Pain; great Stimulation of Reproductive Organs; Priapism in the male; Stupor; Coma.	No known Antidote: evacuate Stomach; White of Eggs.

DRUG	GENERAL SYMPTOMS	ANTIDOTE AND TREATMENT
Chloroform	Anesthesia; dilated Pupils; stertorous irregular Respiration.	Invert the Patient; external Heat; artificial Respiration; injection of Strychnin.
Cocain	Vertigo; Nausea; Faintness; small rapid Pulse; slow Respiration; dilated Pupils; Prostration.	Stimulants; artificial Respiration. The best known Antidote is Amyl Nitrite.
Corrosive Sublimate *(Mercury)*	Gastro-enteritis; Vomiting; Colic; Diarrhœa; Halitosis; small frequent Pulse; cold Extremities; Convulsions; Coma; Collapse.	White of Eggs; evacuate Stomach; external Heat; artificial Respiration; Digitalis.
Poisonous Mushrooms	Abdominal Pain; Nausea; Vomiting; Diarrhœa; bloody Stools.	Evacuate Stomach; Atropin, Strychnin; blood transfusion. Little can be done without the aid of a physician.
Opium	Drowsiness; Deep Sleep; Loss of Consciousness; strong full slow Pulse; Stertorous Breathing; Blue Skin; General Relaxation; cold, clammy Sweat; Pulse becomes feeble; Coma.	Evacuate Stomach by Emetics; give Tannic Acid; Strong Coffee; External Heat; Artificial Respiration; Digitalis; Whiskey; *Keep the Patient Awake.*
Quinin	Deafness; Blindness; Nosebleed.	Tannic Acid; Whiskey; Ammonia; Strong Coffee; Artificial Respiration.
Strychnin	Muscular Rigidity; Tetanic Spasms; Convulsions; Staring widely opened Eyes; Intermittent Respiration; Priapism.	Amyl Nitrite by inhalation or hypodermically; Tannic Acid in Draughts of Hot Water; Bromid of Potassium; Artificial Respiration.
Paris Green *(Copper Arsenite)*	Burning Pain in Stomach; Metallic Taste in Mouth; Gastro-enteritis; Vomiting; Constant Expectoration; Delirium; Anesthesia.	Evacuate Stomach; Yellow Prussiate of Potassium; Vegetable Oils; White of Egg; Milk.

Modern Fads.—"The festive flask is too much in evidence at social gatherings of the young, and bootleg whisky is ruining the skin of the American girl. Even if whisky is made from the purest substances, it contains fusel oil and other poisonous byproducts which are only eliminated by years of evaporation and aging. Almost all the whisky sold illegally contains fusel oil and other poisons which are particularly irritating to the skin, and induce severe types of acne and eczema. These diseases usually attack the face, and often leave permanent scars which give the skin a dried and wrinkled appearance. After continued onslaughts of liquor, the kidneys become irritated and the eyelids become swollen and puffy. The nose and cheeks eventually become flushed, then permanently red, and the ensemble is a picture sad to contemplate.

"Another fad without sensible foundation is the desire on the part of girls and women to become abnormally thin; or, as I term it, 'pathologically thin,' because in many instances actual disease is deliberately acquired in order to rid the body of normal tissue. Dieting without medical supervision is extremely hazardous, because certain foods and substances are absolutely necessary in order to maintain normal health. The human body is the most wonderful and complicated chemical factory in the world, yet many people tamper with it as if they were handling a concrete-mixer. A strikingly sad example of improper dieting was the case of a shapely motion-picture actress, who became a nervous wreck and blasted her career by restricting herself to tomatoes, spinach and orange-juice. A director told her she was becoming too heavy, and without medical advice she began the starvation process, staking it against her career. She lost.

"A frequent error among those dieting is the neglect to drink at least eight glasses of water every day. Sixty per cent. of the human body is water, and unless sufficient water is supplied every day, the body suffers and harmful changes take place. Water does not make one fat.

"A girl of to-day who is of normal weight is considered fat by her friends, and rather than be normal and healthy she adopts one of the many dangerous methods which are supposed to reduce the weight. Some of the misguided ones begin by overexercising and undereating. Others take a drug which is highly poisonous and oxidizes the fatty tissue, not only on the external parts of the body, but also in the heart muscle and in other vital organs where a certain amount of fat is a necessity.

"I have known other instances where young girls refused to sleep more than a few hours out of the twenty-four because of their frantic endeavor to become 'pathologically thin.' All these methods induce abnormal changes in the body, and the deluded victim usually succeeds in not only losing weight but also her health and youthful appearance. Her skin becomes dried and wrinkled and her vitality lowered, thus rendering her susceptible to many skin diseases.

"These girls frequently develop furunculosis, which is a skin disease consisting of successive crops of boils. Others become affected with dermatitis, which is an inflammation of the skin. It is quite evident from the foregoing examples that the young women who practise unscientific methods of reducing weight injure their health and damage their skin, which becomes wrinkled at an early age.

"A word of warning regarding the dangers of sunburn might prove helpful, as many young women pay a heavy penalty every summer because of their desire to acquire a heavy coat of tan. During July and August the sun delivers large amounts of ultra-violet light, and overexposure to these rays produces a chemical burn which damages the skin, induces skin diseases and even endangers the life of the victim. A moderate coat of tan can usually be acquired gradually, but Flaming Youth desires quick changes, with the usual sad results. If the skin burns and does not tan, it is a sign that your skin cells are unable to manufacture the necessary protective pigment, and you should carry a parasol or wear a large hat when at the seashore or when exposed to intense sunlight."

* * * *

"Many women dye their hair because it is gray, but gray hairs are by no means a sign of advancing years. I have known families where every member was gray before their twenty-first year. There is no reason why the girl of to-day should damage her health and skin in order to obtain artificially colored black hair.

"In order to maintain good health and a clear skin, one should eat properly. A well-balanced diet consists of one part of protein, three of fat, and six of carbohydrates. Green vegetables and fresh fruits should be included, as well as some milk or cream, in order to insure a supply of vitamines. One should exercise at least one hour a day in the open air. Walking, swimming, horseback riding, and golf are pleasant and beneficial forms of exercise.

"Alcohol and tobacco should not be used before the twenty-first year, but after that they may be used temperately, if desired, and if they are never adulterated nor poisoned. But it must be pointed out that it is almost impossible to get 'good liquor' in prohibition America.

"The skin should be washed with lukewarm water and a mild, pure soap at the end of the day. This removes dust, dirt, powder, and other accumulations. It promotes the circulation in the blood-vessels of the skin, and wards off many skin diseases." (Dr. Charles F. Pabst, attending dermatologist at Greenpoint Hospital, Brooklyn, New York)

"Women all over the country are ruining their health trying to reduce their weight in order to live up to a false standard of beauty.

"Girls and young women—the future mothers of the race—are menacing the welfare of the nation by adopting extreme measures to rid their bodies of normal tissue.

"The general and increasing popularity of the feminine fad for sylph-like slenderness is finding expression in over-dieting, violent exercise and the taking of gland extracts which often result in permanent impairment of health.

"A false conception of beauty is responsible for the situation.

"The modern ideal of beauty is a thin, boyishly formed girl, underweight and without those contours of body which were formerly considered essential to feminine pulchritude.

"Young girls today are recklessly sacrificing their health by attempting to keep thin in order to fulfill the requirements of beauty. They eat

little and play hard, and many of them make matters worse by smoking and drinking and cutting down on their sleep.

"They don't want to be strong, robust and healthy, preferring, as one girl who came to me for advice on how to reduce expressed it, to be 'thin, white and interesting.' They have apparently taken Camille as their ideal, and feel that they will be more 'interesting' if they are thin and have circles under their eyes.

"Unsupervised dieting is always dangerous, and particularly so in the case of young girls who are doing lots of exercising. They invariably cut down on essential foods, and the result is that they soon find themselves in a debilitated condition where they are susceptible to tuberculosis and other diseases.

"Already the instances of tuberculosis between the ages of 15 and 25 have materially increased, and statistics on deaths at age periods will undoubtedly show an alarming downward trend during the next five years unless the movement is checked." (Dr. John M. Beffel)

"Our sympathy may be wholly wasted, but occasionally these cold mornings, especially on the draughty street cars, we feel a tug of pity for the girls. They sit huddled in their knee-length coats, their legs protected only by sheer stockings, holding them close together, perhaps unconsciously in a pitiable attempt to encourage warmth. The gooseflesh is sometimes visible. It may be true, as some contend, that the average woman, and more particularly the young girls who never wore long skirts, are seldom 'legconscious.' But that isn't true on such mornings as Jan. 3rd. They are 'legconscious,' painfully so, but it's their business, and perhaps they count the cost small for the effect obtained." (N. O. *Item-Tribune*)

Sex Literature.—To pander to the unhealthy cravings of our corrupt age a great mass of sex literature is widely advertised and offered to the public. Most of it is cheap pornography. Often the specious plea is made that these publications dispel ignorance, and diffuse salutary knowledge. The plea is good, but the offering is false. Proper sex knowledge is a valuable attainment, but the majority of these publications do not afford it. No book treating of sexual life should be read without a previous endorsement of competent authority.

Among the worst publications of this kind are two anonymous volumes entitled: "Autobiography of an Androgyne", and "The Female Impersonators." The unknown author rehearses a foul unnatural course of sexual degradation as his autobiography, and throughout makes a plea for pity, on the ground that he was born with a congenital homosexuality. He illustrated his work by photographs of himself in which he obviously distorts his body to make feminine characteristics appear.

The existence of androgynes and gynandroids is proven. In such cases there might be a mixed sexual propensity. This is not sex perversion. Sex perversion is never congenital. The control of all sex is in man's free will and the grace of God.

I doubt that the anonymous writer ever perpetrated the horrors which he has offered to the public. The vilest prostitute of the world might write a companion volume for these pestiferous works.

Finis

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